

# MATERIALS MANAGEMENT REVIEW



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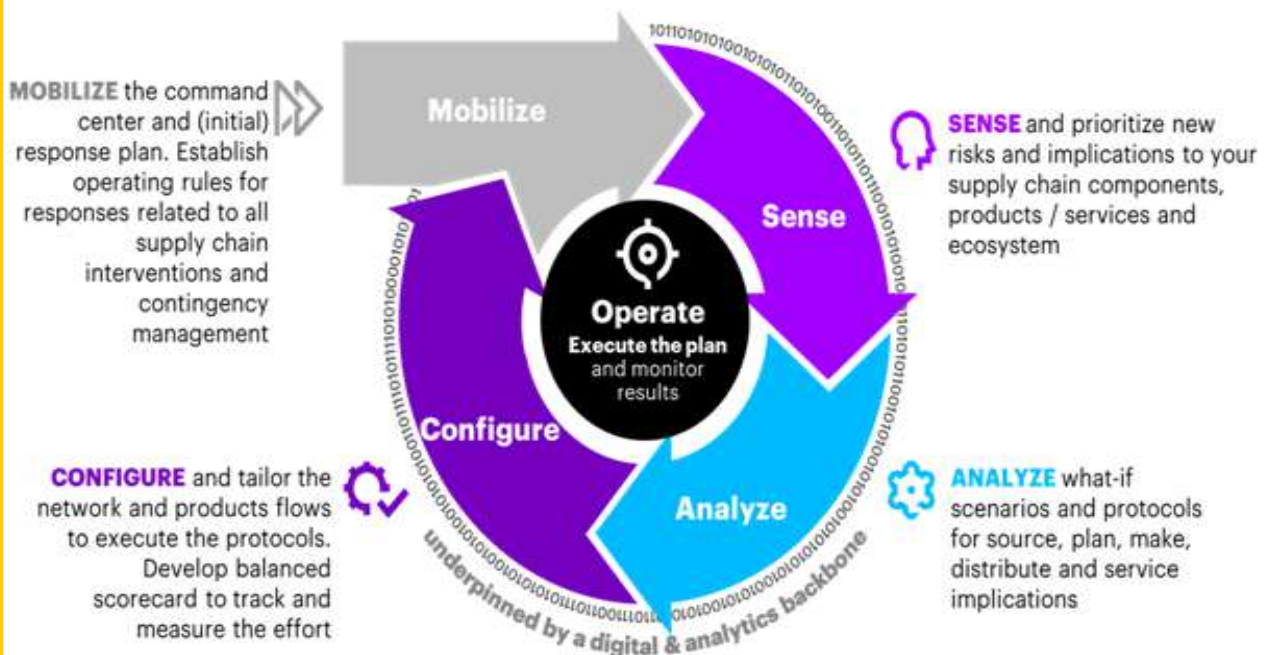
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April 2022

## Interview with B. Narayan, Group President, Procurement & Projects, Reliance Industries Ltd.



## Risk and Resilience Management in Post Covid Supply Chain



# SPECTRUM 2022



Team IIMM Chennai Branch along with National President and National Secretary and Treasurer

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



During the past two years, we all have witnessed supply chain disruptions due to Covid 19 Pandemic, which not only got prolonged with the life of Covid 19 but badly impacted the industries leading to considerable fall in the industrial outputs. For years, companies have focused on eliminating redundancy in sourcing to reduce fixed costs and promote efficiency, but the matter of fact is that, COVID-19 pandemic has tested the effectiveness of years of research, debate and planning on supply chain concepts and technologies.

The new age mantra that seems to make things fall in place post pandemic is Risk and Resilience Management of Supply Chains. An organization's supply chain operations can be a source of vulnerability or resilience, depending on its effectiveness in analyzing & monitoring risk, implementing risk mitigation strategies, and establishing business continuity plans. It is important to analyze the losses and reason for such losses before developing a mitigation strategy.

Resilience is a much talked about word in supply chains with a basic notion of developing diversified supply base, increased inventory levels at critical locations, reducing process complexity and rationalizing product ranges. However, it is a well thought-off strategic process to gauge the transparency across the entire supply chain and interconnectedness/dependencies between the company and its tier-one, tier-two and their sub-tier suppliers.

Another critical enabler that can make supply chain more resilient is digitization of supply chain operations. By deploying digital applications like Digital Twins, Artificial Intelligence, Internet of things, Block Chain, Cloud Computing, Big Data Analytics etc., we can pinpoint the customers and consumers that are likely to be affected due to sudden disruptions in supply chains and accordingly companies can develop their mitigation strategies to address these disruptions.

It is pertinent to mention here that, every supply chain has to lookout its pre-requisites for defining its resilience strategies. Supply Chains with better understanding of risks and potential losses can thrive better with real world resilient strategies.

IIMM has carried out its 1<sup>st</sup> ever study in supply chain management in association with SAP Ariba. Same is being published in the current issue of MMR in the form of an article by Sh. B V Iyer, Former President, Indian Institute of Materials Management.

Starting from this issue of MMR, I have introduced two new features. First is, 'Supply Chain Quiz Contest' which contains MCQs on supply chain and related areas. Second one is, a series of interviews of eminent personalities related to SCM and first of it is Interview of Sh. B Narayan, Group President, Reliance Industries Ltd.

We have chosen the theme of "Materials Management Day" for this year as "Risk and Resilience Management in Post Pandemic Supply Chain". I appeal to all the readers and professionals of Supply Chain Management to organize Workshops, Seminars, Press Conferences, discussions etc and publish articles in Print, Electronic and Social media to spread awareness about Supply Chain Management.

Wishing all of you a "HAPPY MM DAY"

**H. K. SHARMA**  
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# SUPPLY CHAIN 4.0 - TRANSFORMING INDIA'S LANDSCAPE

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## 1. Introduction

If India to become \$5 trillion economy, an important step need to be taken would be to exploit the opportunities for global trade and become a preferred sourcing hub for the world. The country needs to make it simpler to manufacture and trade within India and globally, investments in trade infrastructure and adoption of digital supply chain along with robust logistics infrastructure are necessary to enable Indian businesses stay competitive at a global stage.

Long before industry 4.0 captured the collective imagination, supply chains have been critical cogs across industrial organizations. In recent times, though supply chains have grown to take increasingly worldly and complex shape on adoption of digital and physical technologies that expand the possibilities of what it can deliver. The advent of these technologies have enhanced the interconnected nature of supply chains and allowed it to evolve into more responsive than ever. With this, the supply chain has become more strategically critical component of the organization delivering greatest insights and enabling leaders to take better informed decisions

India's supply chain landscape stand is on the cusp of a revolution with digital transformative capabilities pushing it to altogether new heights. Considering the backbone of the economy, India's supply chain ecosystem soars to new heights. The Indian logistics sector is expected to be worth \$215 bn by 2020-21, and given its immense potential, there is a need to understand the challenges faced by the sector and remove bottlenecks to progress. With India moving boldly towards claiming its place in the global polity, we are witnessing a fast changing India. As our supply chain infrastructure improves, better regulatory climate, strong global connect and inexpensive and accessible technology present massive opportunities for SCM practitioners to optimize their supply chains. It is only then that supply chain impact will be truly far-reaching and profound.

## 2. Importance of Supply chain

Over the last thirty years, logistics has undergone a tremendous change: from a purely operational function

that reported to sales or manufacturing and focused on ensuring the supply of production lines and the delivery to customers, to an independent supply chain management function that in some companies is already being led by a CSO - the Chief Supply Chain Officer. The focus of the supply chain management function has shifted to advanced planning processes, such as analytical demand planning or integrated S&OP, which have become established business processes in many companies, while operational logistics has often been outsourced to third-party LSPs. The supply chain function ensures integrated operations from customers to suppliers.

In the Indian context though, the digitally connected supply chain and its potential to drive innovation has yet to fully catch-on, India's nationwide infrastructure issues have often hamstrung our supply chain network, with challenges coming with the territory, be it transporting goods by road, rail or sea. Delay in movement is often the norm, and multiple tax regimes have been an age-old challenge to surmount.

But introduction of GST has eased things considerably so too can digital supply chains kick off the net major growth wave. Logistics costs currently account for as much as 14 percent of India's Gross Domestic Product (GDP), and smart supply chain solutions can play a major role in keeping these costs in check.

Industries as diverse as automotive, retail and manufacturing are adopting digital technologies to help reinvent their supply chains and increase business efficiencies. To note just two examples, RFID and IoT tools are already making their impact by way of operational efficiencies and cargo safety as well as reducing transport costs by increasing the speed of freight movement.

## 3. Facets of digital supply chains

The emergence of new digital and analytical capabilities, combined with significant policy changes and rising customer expectations, companies in India need to upgrade their supply chain processes. Advanced economies with sophisticated logistics ecosystem have demonstrated the benefits of digital transformation across the logistics value, including warehousing

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operations, freight transportation, and last mile delivery. There advances can help improve the performance and efficiency of India's logistics sector. Five important facets of digital supply chain namely internet of things (IOT), automation, blockchain, cloud computing and big data analytics are discussed as under.

i) **Internet of things (IOT):** it represents a unique technology transition that can enable predictive diagnosis and monitoring performance across the ecosystem. Advanced sensors can be deployed to monitor and detect risks pertaining to breakdowns, helping avoid process delays and fatal accidents. Additionally, global positioning system (GPS) and Radio-frequency identification (RFID) systems, are being used to provide real time visibility. This allows service providers not only accurately predict delivery times and improve asset utilization, but also increases engagement as customers track consignments in real time, reducing friction that used to exist on the customer side.

ii) **Automation:** from the use of robots to self-driven vehicles and drones, automation is going to be a big part of the supply chain of the future. This will reduce manual intervention for better management of costs. Artificial intelligence (AI) can play a big role in this automation drive and improve the quality and speed of services. It also holds the potential to quicken any inspections, curbing the possibility of handling damage and cutting down on inventory holding time.

iii) **Block chain:** it may be particularly suited to India given the fragmented nature of India's logistics sector and the lack of any common platforms to share information. The sheer quantum of manual data entry increases the risk of human error, and this would help in creating an end to end logistics system that is truly integrated.

iv) **Cloud Computing:** As logistics become increasingly leaner, optimizing asset utilization will be pivotal to enhancing operational efficiency. Cloud computing can enhance collaboration and increase efficiency by allowing service providers to share fleets and networks effectively. It will allow vast amount of data created across the entire value chain to be easily accessed for round the clock monitoring from anywhere.

v) **Big Data Analytics:** Practitioners can drive future strategy by identifying improvements, all with the use of data analytics. The possibilities are boundless, including estimating the remaining useful life of assets, identifying any operation inefficiencies, and slashing redundancies and costs. Digital can pay rich dividends, bringing together disparate stakeholders to deliver

richer value than ever.

#### 4. Digital supply chain enablers

The transformation into a digital supply chain requires two key enablers - capabilities and environment. Capabilities regarding digitization need to be built in the organization but typically also require targeted recruitment of specialist profiles. The second key prerequisite is to establish IT landscape, an innovation environment with a start-up culture need to be created. This "incubator" needs to provide a high degree of organizational freedom and flexibility as well as state-of-the-art IT systems to enable rapid cycles of development, testing, and implementation of solutions. Fast realization of pilots is essential to get immediate business feedback on suitability and impact of the solutions, to create excitement and trust in innovations, and to steer next development cycles. The "incubator" is the seed of Supply Chain 4.0 in the organization - fast, flexible, and efficient.

Supply Chain 4.0 encompasses the application of the Internet of Things, the use of advanced robotics, and the application of advanced analytics of big data in supply chain management: place sensors in everything, create networks everywhere, automate anything, and analyze everything to significantly improve performance and customer satisfaction.

#### 5. Way forward

India is prioritizing transformation of the logistics sector which will have direct positive impact on the economic growth. It reduces the cost goods and services, improves global competitiveness manufacturers and MSMEs, facilitated trade growth and creates new jobs.

One of the realities of modern day society is that it generates huge amount of data, and this is equally true of modern supply chains. IOT is one definitive technology that will transform India's supply chain through the use of data analytics. It is possible to get real-time data at all points across the supply value chain: inventory levels, point-of-sale information, consumer buying habits, fluctuation in freight costs or raw materials can be adjusted for as needed.

New generation robotics, automated vehicles (AVs) in warehouses, blockchain, IOT sensors are going to permeate India's logistics sector. In the time to come, digital tools will spread across the entire value chain rapidly as organizations start to realize the value of their supply chains with these digital tools.

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# BLOCKCHAIN-ENABLED SUPPLY CHAIN: KEY ADVANTAGES

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**Introduction :** In a highly disrupted environment, supply chains need to have dynamic and resilient strategies to tackle the impact of Covid-19 outbreaks. Supply chain disruptions are not merely isolated to the supply chain as they have a negative ripple effect on the entire organization. Supply chain organizations must ensure they can adapt quickly as problems arise. Most organizations struggle with a lack of data integrity, data sharing, and data visibility with suppliers and buyers as they do not have a trustworthy supply chain. Hence, companies are pushing toward digitization of supply chains by adopting emerging technologies like blockchain technology to allow firms to adapt to challenges in real-time. Blockchain technology has the potential to make supply chains more responsive and more resilient against market disruptions. Blockchain promises to streamline deficiencies of inter- and intra-organizational supply chain processes by making them immutable, decentralized, secure, transparent, and operationally efficient.

The research on the deployment of blockchain technology in supply chains support the new proposition that competition is not between the supply chains, but rather between the deployment of various Information Technologies (ITs) [e.g., blockchain, Internet-of-Things (IoT), BigData, etc.] behind the supply chains. Blockchain could be used to create a permanent, shareable, actionable record of every moment of a product's trip through its supply chain, creating enhanced efficiencies, improved visibility, and better product traceability, authenticity, and legitimacy. Blockchain can influence the flow of money, material, and information in a supply chain.

**Blockchain Technology :** Blockchain has recently gained significant attention and hype as a disruptive technology. Blockchain is best known as the backbone for the digital currency Bitcoin and other cryptocurrencies that make financial transactions safe without a bank or other intermediaries. Although the initial focus of blockchain was on cryptocurrencies and financial-oriented applications, the transformative features of blockchain also motivated non-financial sectors. Blockchain has disrupted many industries like banking, financial services, human resources (HR), marketing, operations, real estate, insurance, healthcare, electronic health records, pharmaceuticals, renewable energy, and supply chains (Madhani, 2021a; 2021b; 2022a; 2022b) and is continuing to impact these

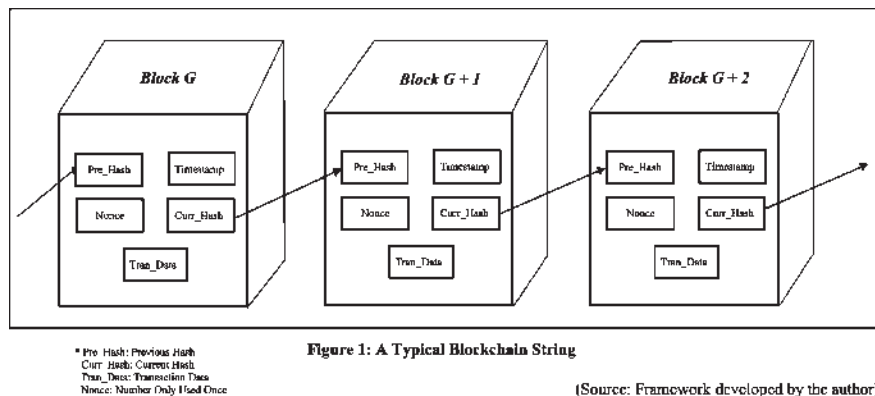
sectors due to its decentralized, verified, and immutable nature.

Blockchain records the transactions by using a distributed ledger system and can be represented as a giant global Google spreadsheet document representing the accounting of transactions. Blockchain encompasses a history of data records or 'blocks'. A new block is formed with each transaction and then connected in series with the next one in an irreversible mode. Hence, blockchain is represented as a chain of "blocks". Blockchain stores transactional data in blocks that can be shared between members and added together in a chronological sequence which forms a chain. Such blocks of data are distributed over networks and can be viewed and verified by anyone in the network. Besides, because the block has a copy of all transactions and cannot be modified, the technology ensures transparency and enhances trust over the network. A blockchain is a digital logbook of transactions where each block is connected in series to the one before and after it. The blocks are linked in a chain (hence called blockchain) in which a block is made up of data, a hash, and the hash of the previous block, creating the chain-like design.

## How Blockchain Works

To understand the working of a blockchain, consider transactions between two parties (i.e. participant M and participant N). This mechanism is based on the blockchain concept. Instead of recording accounting transactions by participant M with another participant N - which is recorded when completed in two separate ledgers - blockchain created a digital, distributed ledger that accounts for the transaction and brings two participants M and N together. Transaction in blockchain initiates with participant M, informing the network of his arrangement with participant N. Then, N announces its acceptance, by using his public-key, to the network and simultaneously informs the nodes within the network to determine the authenticity of the transaction. Several transactions are subsequently combined into one single block. Blockchain encrypts data and delivers them to all peers for verification. In most cases, the authenticity of the transaction is verified with the use of miners who deploy computing resources that compete amongst each other to create the next block. Miners extract the information from the block, in which it has been stored after N's acceptance,

and turn it into a hash by applying a mathematical formula to it. As shown in Figure 1, the principle of blockchain technology is the creation of a chain of blocks of data.



### Blockchain Characteristics and Supply Chain Benefits

Blockchain technology with its salient characteristics and derived benefits in supply chains are given in Table I.

**Table I: Blockchain Characteristics and Derived Benefits**

S. No.	Blockchain Characteristics	Description	Supply Chain Benefits
1	<i>Distributed ledger</i>	Data is stored in blocks that are maintained on multiple devices in a network to avoid centralized authority and multiple ledgers. Distributed network checks transactions through a process known as mining to avoid centralized authority and multiple ledgers.	Single source of truth
2	<i>Decentralized networks</i>	Decentralized data acts as a key defense against hacks and fraud. The Blockchain network is trustless, i.e., no need to trust one single party to execute transactions. Avoids large central servers to store and maintain data and the transacting parties need not know each other. Decentralization leads to transparency in the system. Blockchain uses a Peer to Peer (P2P) decentralized network to store data at multiple locations as opposed to the traditional client-server model and hence reduces the threat of vulnerabilities (e.g., hackers, corrupted servers).	Transparency
3	<i>Real-time updates</i>	Updates all the records in real-time, making them useful in networks with multiple organizations.	Effective collaboration



4	<i>Consensus algorithms</i>	Blockchain shared ledger system allows participants to monitor and validate transactions independently. The agreement is reached through the use of algorithms as all parties agree to network verified transactions. The consensus mechanism helps to avoid fraudulent actions as participants validate transactions independently. Consensus mechanisms exist in a variety of forms (e.g., proof of work, proof of stake, proof of elapsed time, etc.).	Fraud prevention
5	Tokenization	The non-digitized product can be virtualized (converted to virtual tokens) for transaction and recording purposes. It provides transactional convenience for tangible and non-digital goods (NFT).	Transactional convenience
6	<i>Immutability of data</i>	Entries into the blockchain ledger are visible to authorized parties and thus cannot be altered by any single party. Transactions histories will never be lost and the records will be retained. Hash algorithms and cryptographic digital signatures help in data integrity and avoid manipulation of the data. It helps in data integrity as information cannot be corrupted and hence avoid manipulation of the data.	Enhanced security
7	<i>Smart contracts</i>	Automatically executable scripts by participants when predetermined terms and conditions are met helps in increasing operational efficiency by enhancing accountability, transparency, and speed of transactions. It can automate the process of sending a payment to a supplier once the system confirms shipment is delivered and thus allows disintermediation between transacting parties.	Faster settlements
8	<i>Lifelong validity</i>	Transactions histories will never be lost and the records will be retained.	Identifiability
9	<i>Disintermediation</i>	Creates a decentralized environment as no central governing authority or entity controls the entire system to validate and offer credibility to transactions. Creates a decentralized environment as private and public keys (accessibility to anyone who validates) make it possible to avoid third parties in transactions.	Cost reduction

10	<i>Encryption</i>	The data transmitted is fully encrypted, to provide data security. Use mathematical codes to encrypt all transactions for avoiding fraudulent activities by hackers.	Data confidentiality
11	<i>Provenance</i>	Transactions in the blockchain system are timestamped to facilitate tracking and auditing anytime and forever.	Traceability

(Source: Tabulated by Author)

#### Blockchain Technology Deployment in Supply Chains: Key Advantages

Supply chain organizations make plans to ensure that they can adapt quickly as problems arise. However, most such organizations struggle with a lack of data integrity, data sharing, and data visibility with suppliers and buyers as they do not have a trustworthy supply chain. Hence, companies are pushing toward the digitization of supply chains by adopting emerging technologies like blockchain. Blockchain provides many positive features that can potentially resolve several SCM issues such as demand forecasting and inventory management at the planning stage and product traceability, managing risks and disruptions, and building trust at the coordination stage. Blockchain technology has the potential to make supply chains more responsive and more resilient against market disruptions. Blockchain deployment in the supply chain can help reduce cost and risk and improve quality, flexibility, speed, and sustainability. The applications of blockchain have begun to revolutionize different aspects of supply chain and operations management for the development of real-time supply chain capabilities. Blockchain technology leverages a variety of supply chain operations such as demand forecasting and inventory management, order management, resilience, risk management, and supply chain distribution.

Blockchains provide the most value to supply chains through their extended visibility and product traceability as better traceability improves transparency in the supply chain. Blockchain can increase supply chain visibility and transparency by allowing every partner to access information concerning the activities within the supply chain, such as providing customers with the ability to evaluate the products before making a decision and by preserving irrefutable and trusted data about past transactions. Blockchain-based traceability helps in achieving supply chain coordination and can enhance quality management and decrease production costs due to increased forecast

accuracy. Using blockchain technology for traceability in supply chains can bring about operational efficiency in different ways: error elimination, process streamlining, visibility into the supply chain, and improved order fulfillment.

Blockchain deployment in supply chains for traceability supported by automated transactions can also improve inventory management and speed up data reconciliation. Various business areas, such as food, pharmaceutical products, and diamond, have become the hotspots for blockchain initiatives in supply chains as it provides the solution for traceability issues. The businesses operating in these industries are facing big financial losses due to a variety of supply chain issues such as counterfeiting, stolen products, gray market, fraud, and product recalls. Such factors have prompted a movement of supply chain stakeholders toward more transparency and traceability.

With blockchain deployment, information is distributed peer-to-peer in real-time using a consensus mechanism. Such information sharing in the supply chains reduces information asymmetry and decreases the rent-seeking behavior of any of the supply chain players. With this increased flow of information, suppliers would get a better insight into demand data allowing them to estimate lead times better and thus mitigate the 'bullwhip' effect. Blockchain deployment in supply chains transforms traditional supply chains by enhancing operational capabilities and strategic capabilities.

#### Traditional Supply Chains versus Blockchain-Enabled Supply Chains: Key Comparison

Blockchain has immense potential to transform every step of the supply chain, from raw materials procurement to distribution to the consumers. The difference between traditional supply chains and blockchain-enabled supply chains is given in Table II.

**Table II: Traditional Supply Chains versus Blockchain-Enabled Supply Chains**

<b>Sr. No.</b>	<b>Traditional Supply Chains</b>	<b>Blockchain-Enabled Supply Chains</b>
(1)	Information flows are hindered by disparate technological and operational environments of the organizations. Achieving interoperability among these systems requires expensive integration and standardization efforts.	The blockchain serves as an independent layer linking participating ERP systems enabling communication of information on a real-time basis as it is readily accessible to all the relevant entities that are part of the network.
(2)	In traditional supply chains, interoperability among the supply chain information systems is hindered by a lack of standardized operational practices and data formats for effective data exchange between smart devices and supply chain systems.	Blockchain overcomes the interoperability and integration issues of traditional supply chains and resolves a major concern in the Internet of things (IoT) communication with seamless information flows.
(3)	There are security concerns in sharing sensitive data.	In blockchain-enabled supply chains, cryptographic tools ensure the security of information.
(4)	Non-inclusion of all supply chain entities due to technical complexities prevailing in traditional supply chains.	Easier integration of customers and suppliers in blockchain-enabled supply chains enables better information transparency.
(5)	Traditional supply chains often encounter time delays due to cumbersome document verification processes (bills of landing, letter of credit, etc.) at the supply chain delivery points.	Regulatory processes can be expedited by improving confidence in the documentation and hence leads to reductions in wastage, risk, and insurance premiums. Instantaneous access to trustable information leads to faster processes verification.
(6)	Time delays in cross-border financial settlements due to longer cross-border remittance processes of banks.	Faster cross-border remittance processes with banks and other financial firms participating in blockchain-enabled payment platforms.
(7)	In traditional supply chains, there is a lack of platforms that connect the supply chain partners. Hence, require the involvement of third-party intermediaries in trading products and services.	In blockchain-enabled supply chains, supply chain platforms enable partners to connect and trade for the required products and services using smart contracts.
(8)	Less automation in inter-firm and intra-firm workflows due to information security concerns in traditional supply chains.	Blockchain-enabled supply chains provide more scope for automation in inter-firm and intra-firm workflows by using IoTs and smart contracts.
(9)	Difficult to couple with supply chain partners systems due to technology constraints	Blockchain systems are easy to couple with supply chain partners' systems and smart devices.
(10)	Less scope for engaging and empowering supply chain partners.	More scope for engaging and empowering supply chain partners.
(11)	Lack of collaborative platforms for enabling interactions among supply chain partners due to low trust and security concerns.	Blockchain systems provide trustable and secured platforms for engaging in collaborative and confidential interactions among the supply chain participants.

(Source: Tabulated by the author)

## Blockchain Deployment in Supply Chains: Enhancing Business Performance

Blockchain deployment in the supply chain enhances efficiency as it reduces cost in the areas of procurement, logistics, supply network, and inventory management and hence increases cost efficiency. The blockchain-based supply chain system does not require a mediator or third-party intermediary for a transaction, leading to lower transactional costs. Blockchain deployment in supply chains enhances business performance as explained below:

**1. Cost Reduction :** Reduction in material costs, processing costs, information costs, distribution costs, overhead costs, risk costs, and other intangible costs.

**2. Process Cycle Time Reduction :** Reduction in supply chain process cycle time, product development cycle time, transaction time, and product/service delivery time.

**3. Process Improvement :** Increased capacity, inventory utilization, and resource utilization.

**4. Flexibility :** More flexibility to respond to customer demands (delivery flexibility and service systems flexibility) and environmental challenges.

**5. Quality Improvement :** Reduction in process and product errors, quality differentiation, and reduction in data errors.

**Conclusion :** Today's supply chain networks are dealing with turbulent market conditions that are becoming increasingly complex, competitive, and uncertain due to the fast-changing business environment. There is a need

to effectively leverage blockchain technology in the supply chain as such digital technology significantly helps supply chain participants in reducing time, cost, and administrative work, thereby enabling managers to focus more on strategic tasks for enhancing overall efficiency and effectiveness. Blockchain deployment in the supply chain provides various benefits as resultant supply chain capabilities drive higher efficiency and effectiveness of supply chain operations. Higher efficiency and effectiveness of supply chain operations lead to various benefits: minimize costs, improve quality, enhance customer value, increase sales and profitability, and eventually, lead to higher enterprise value. The entire supply chain network profits from blockchain-enabled supply chains.

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## COMMODITY INDEX

Commodities	Days's Index	Prev. Index	Week Ago	Month Ago
Index	3592.2	3596.9	3522.9	3442.3
Bullion	7948.1	8067.1	7880.0	7587.4
Cement	2597.6	2597.6	2597.6	2563.8
Chemicals	3885.3	3885.3	3885.3	3782.0
Edible Oil	3464.2	3481.2	3483.2	3329.3
Foodgrains	2766.6	2771.6	2689.0	2628.9
Fuel	3690.3	3655.9	3533.9	3533.9
Indl Metals	1920.3	1920.2	1920.2	1920.2
Other Agricom	2346.5	2346.5	2345.0	2321.2
Plastics	2697.3	2666.7	2636.1	2353.7

Source: ETIG Database dated 28th March 2022.





## PROCUREMENT TRAILBLAZER MANAGING RESILIENCE IN SUPPLY CHAIN

**B. NARAYAN, GROUP PRESIDENT  
PROCUREMENT & PROJECTS, RELIANCE INDUSTRIES LTD.**

**C**OVERID-19 has brought major shifts in how products are bought and consumed, forcing many companies to adapt in absorbing the variations in demand that resulted. Yet even though the pandemic's specific dislocations were unprecedented, disruption is becoming all too familiar. With no end to the Pandemic seen in the immediate future, companies are altering their strategies.

While many companies found they could handle short surges in demand for a specific product, on the whole, many businesses have proved vulnerable to shocks. Several factors have contributed to their vulnerability during the pandemic.

Geographically concentrated production in some subsectors has enabled companies to enjoy economies of scale and hone their expertise—but it has also led to bottlenecks when shocks occur. Health emergencies, natural disasters, and localized conflicts can cause shortages that snarl an entire production network. When COVID-19 struck, many companies came to the abrupt realization that some of their critical inputs were single-sourced, further amplifying risk.

COVID-19 has also increased costs for many companies. From guaranteeing the safety of their operations and employees to reacting to increased pressure from customers on service levels, the pandemic has necessitated often costly adjustments.

Although supply chains for chemical companies tend to be more regionalized than those in other industries, the dynamics of commodities relied on by some industry segments, such as building blocks and Hazardous Cargo can expose them to a wide range of shocks. Even some chemicals like temperature sensitive materials which require cold chain for transportation or materials with short shelf life, with more-localized value chains, have faced their own challenges. The relatively short shelf life of certain products means that even minor delays can cause spoilage.

In a recent interview, IIMM Past President and CPO with M/s. Deccan Fine Chemicals India (P) Ltd. Balakrishnan Iyer talked to B. Narayan Group President Procurement and Projects Reliance Industries Ltd. about the challenges of the pandemic, his organization's

response, and what it all means for the future of the supply chain.

**Balakrishnan Iyer:** In your Four-decade career at Reliance Industries, how have you seen the company's operations evolve? What factors have shaped RIL's supply chain the most over this period?

**B. Narayan:** Late Dhirubhai Ambani started a yarn trading business from a small 500 sq. ft. office in Masjid Bunder, Mumbai, but dreamt of establishing India's largest company. Reliance set up a mill in Naroda, Gujarat, sparking off Reliance's backward integration journey. Mukesh Ambani led the establishment of Reliance's first mega manufacturing project at Patalganga in a record 18 months.

In 2000, Reliance commissioned the world's largest grassroots refinery in a record 36 months: The Jamnagar petrochemicals and integrated refinery complex.

Reliance Retail becomes the largest retailer by revenue in 2014, Reliance Jio Infocomm Ltd., ushers in a pan India digital revolution through state of art wireless broadband 4G services promoting to bridge the digital divide.

In 2020 Reliance ranked as the 48<sup>th</sup> highest valued company in the world and ranked 96<sup>th</sup> on the Fortune Global 500 list.

On your sub question, Transition from license-raj based economy to free market has changed the way companies and supply chains work. This has immensely contributed to our growth. Also, RIL expansion into Jio has shaped our focus on using technology for Supply Chain.

**Balakrishnan Iyer:** COVID-19 has led to major reforms in supply chains all over the world but has also brought disruption along the way. What strategies have you implemented in the past two years that helped the company to stay ahead of the competition in such difficult times?

**B. Narayan:** We have 125+ plants in 11 locations. To ensure operations in all plants we did many things.

1. When we sensed initial problems the first thing, we did is to shore inventory of inputs at all plants.

We also Maximized dispatches in early March from foreign suppliers. To Avoid Stock outs at plants there was Identification of all low stock level items at each of the site and daily monitoring of stock levels along with the end user.

2. Interacted with management of each and every supplier to identify and remove bottlenecks for continuity of operations.
3. We had direct coordination with local authorities for requisite permissions to keep Supplier/ Sub-supplier factories operational
4. Daily monitoring of production of domestic supplies and ensuring maximum allocation of production capacity for Reliance
5. Daily tracking of transport operations including direct interaction with truck drivers to ensure unhindered intra and inter- state movement of goods
6. Agile management of PO terms /INCO terms and arrange direct pickup of finished goods wherever supplier was unable to manage.
7. Track and trace transport – in 6 weeks we enabled a digital tracking solution to track all incoming trucks
8. Force Majeure – Managing force majeure notices and working with suppliers to ensure they honor contracts
9. Resolved specific payment issues to enable liquidity and working capital management of suppliers
10. For Imported consignments - Arranged freight consoles of imported goods for critical plant requirements
11. New payment / transaction system for imports to mitigate closure of banks and closure of courier services during lock-down, ensuring imported supplies not affected
12. Uninterrupted custom clearances both for Air and Sea Cargo
13. Priority allocation of resources at CFS, Ports and during custom clearance
14. For OEM supplies - Remote online services were arranged.

Team efforts sustained Supply Chain activities and helped in uninterrupted operations.

Balakrishnan Iyer: How has the pandemic changed the way your organization views supply-chain risk and resilience?

#### B. Narayan:

- New reality - For the 1st time the supply chain disruption was universal. Imports from all countries, domestic movement of goods; production; service availability affected at same time and for weeks.

Our response - This has changed our view on risk management, and we now take an aggregate view of risks vs. just individual risks

- New reality - Health and personnel Safety risk has come to the forefront.

Our response - We are adopting a holistic approach to manage safety and health of contract workers at our sites by collaborating with vendor partners/ our medical services & site admin team's/ Government bodies to keep all safe and ensure business continuity.

- New reality – Earlier single source was a way of life. However, risks are now more significant especially Geo-political

Our response - More aggressive diversification of supply including insourcing of select catalyst/ chemicals. Single source should be for fewer products and services.

- New reality – Offices had to be closed in accordance with pandemic norms and Govt. directions due to Health risks to the employees posed by COVID-19

Our Response—Use technology extensively and adopt Work from Home concept very effectively and make it as a new norm now.

**Balakrishnan Iyer:** We have spoken about the challenges created by the pandemic. Do you also see opportunities that have been created?

**B. Narayan:** Tough times test the relationship with key suppliers and contractors, and we can say that they have become stronger. Not just at a business level but as part of outreach, we have partnered with many of them to offer them a vaccination program for their employees and families. Deepening our vendor base. We have evaluated and inducted suppliers for new alternate sources. Greater effort at indigenisation and in-house production. Feasibility and acceptability of remote working is now universal, and we are extending that concept to our production sites and leveraging technology for remote technical supervision by OEM suppliers in shutdown/ breakdowns thus reducing costs and enhancing safety. Covid has helped in Faster adoption of digital and paperless working within the company.

**Balakrishnan Iyer:** Let's transition to the topic of digital. RIL has been at the forefront of digital innovation in the industry, establishing industry-leading lighthouses. How do you prioritize Industry 4.0 technologies for RIL?

**B. Narayan:** We prioritise on two factors (a) Business priorities - technology that will create the maximum impact on our bottom-line and top line (b) maturity of technology – ease and cost of implementation. Basis this, we are currently investing in building platform applications that provide frictionless, fully digital transactions with great user experience for all our interactions with external and internal stakeholders. These are being built internally using Open-source technology with Cloud architecture. We are investing in AI/ML for solving tough problems whether in manufacturing or process performance improvement. We are doing smaller R&D projects in 3D printing and Block chain which will have a great impact in the future but are yet not mature to deploy on full scale.

The COVID-19 crisis put supply chains into the spotlight. Over the past year, supply-chain leaders have taken strong willed action in response to the challenges of the pandemic: adapting effectively to new ways of working, increasing inventories, and ramping their automation and risk-management capabilities. Yet despite that progress, other recent events have shown that supply chains remain vulnerable to shocks and disruptions, with many sectors currently struggling to overcome supply-side shortages and logistics constraints. End-to-end transparency remains elusive, and a headway toward more localized, flexible supply-chain structures has been slower than anticipated.

The coming months could turn out to be critical for supply-chain leaders. Some companies will build upon the momentum they gained during the pandemic, with decisive action to adapt their supply-chain footprint, modernize their technologies, and build their capabilities. Others may slip back, reverting to old ways of working that leave them struggling to compete with their more agile competitors on cost or service, and still vulnerable to shocks and disruptions.

B. Narayan, is a Group President, Procurement & Projects, Reliance Industries Ltd. He has an experience of 36 years in Chemical Industries like IPCL, Union Carbide and is presently with RIL. He is a BE in Chemical Engineering. &M. Tech from IIT. He has been Closely involved in Petrochem and Refinery Projects of RIL in Patalganga, Hazira and Jamnagar. He has a Specialisation in Project Management, Capital Procurement, Technology Licensing and Contracting. In Reliance Industries Ltd. he is responsible for Revenue Procurement to support 11 operating sites. Mr. Narayan is a Life Member of IIMM and patronizes all activities of the Institute.

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## Indian Institute of Materials Management

### MISSION

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

### OBJECTIVE

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

### CODE OF ETHICS

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

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## ADVANTAGE FOR SELLER ON GEM PORTAL

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- **Access to National Public Procurement Market** : Public procurement refers to the process by which public authorities, such as government departments or local authorities, purchase work, goods or services from companies.
- **No Charges or Fee** : GeM portal is a one stop solution for all of your needs. It is an online marketplace hosted by DGS&D. GeM registration is completely free. It is truly a platform of transparency. to register on GeM for free visit website <https://gem.gov.in>.
- **Special Provisions and sections for startups, MSMEs and Emporium Products** : Prime Minister Narendra Modi started the Startup India Campaign in 2016 to boost entrepreneurship in India. The action plan aimed at financing for startups, simplifying the incorporation of startup process and grant of various tax exemptions and other benefits to startups.
- **Fully online, Paperless and Contactless Platform** : National Mission on Government e Marketplace (GeM) will be launched on 05-09-2018 to accelerate the adoption and use of GeM by major central Ministries, State Governments and their agencies. The aim of the National Mission is to promote inclusiveness, transparency and efficiency in public procurement and achieve cashless, contactless and paperless transaction.
- **Brand application and Brand approval Process has been revamped for Sellers** : To get your brand approved on the Government e-Marketplace, you need to meet specific eligibility criteria and pass the quality assessment audit. From giving you complete and extensive details on the procedures involved to the list of documents required, we provide comprehensive training of each step. Gaining brand approval allows businesses to list and sell their products or services on GeM easily.
- **Easy access to Participate in Bids/Reverse Auction.**
- Clock has been enabled in RA to display remaining time for Seller Participation.
- Online Grievance Redressal mechanism for quick resolution.
- All Sellers will be shown reasons for rejection.
- Seller friendly dashboard for monitoring supplies & payments.
- Seller belonging to North East States and J & K are exempted from ITR at the time of Bid Participation.
- Dynamic Pricing- Price can be changed based on Market Conditions.
- Direct Access to Government Departments and their Organizations.

### Types of Tender on Government e Marketplace

The Indian Government launched a transparent e-Marketplace popularly known as GeM to empower small traders and manufacturers.

Any small trader or manufacturer can get a GeM registration for its business easily. A business can then access the wide interface to sell its products and services to the distinguished buyers from Government sector or PSUs, where there is a huge requirement for such supplies.

### Now the question arises,

**How do the sellers having GeM registration sell their products to the Government sector buyers?**

**How do the merchandisers or Sellers having GeM Registration sell their products to the Government sector buyers?**

This is fulfilled by a process called Public procurement. The government buys the goods of registered buyers through the process of Public procurement.



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## What is Public Procurement?

Just like private companies, the Governments' services purchase goods and services as per their functional and sanctioned demand.

Public procurement refers to the process by which central, state governments, and PSUs buy goods & services from private dealers and manufacturers. In common terms, this is called government tender.

Public procurement requires a strict procedure in order to ensure that the purchases are fair, effective, transparent, and with minimum public offers.

Now, we shall bandy different kinds of Public procurement or government tender.

## What is Tender?

The tender is an offer to perform some task or to supply goods at a fixed price. The contractors will be invited to submit sealed bids for construction or for the provision of specifically designed services or goods during a particular time frame in the initial step of this tender process.

## Understanding a Tender

India's e-tender process is structured to ensure that the work to be performed for the government or a specific client is accomplished reasonably. For example, some places may have specific procurement policies that direct on how to make a decision, and which tender to accept.

An open tender is the main form of tender, followed by both the government and the private sector. The client advertises the tender offers in the local newspaper along with the critical information of the proposed works inviting interested contractors.

### 1. Advertised Tender Enquiry

The government advertises specifications on GeM portal and Central Public Procurement Portal (CPPP) for the acquisition of goods and services. And give Note to sellers to apply for tenders. This method is used by government institutions when the acquisition of goods and services of the value of INR. 25 lakhs and above.

### 2. Limited Tender Enquiry

This method is applied when any goods and services regularly secured by government departments such as paper, printer cartridge filler, water supply, etc.

Under limited tender inquiries, limited suppliers are impaneled by the Government Department. Usually, Limited Tender Enquiry is used when the expected value of the goods and help to be procured is less than INR 25 Lac.

### 3. Two-Stage Bidding

This is a conventional method used to procure high-value items such as buying plants and machines etc. and when any acquisition requires to assess complex and technical terms. Under Two-Stage Bidding, tender is allocated to a supplier based on strongly passing below 2 stages:

- Technical Assessment,
- Financial L1 (Lowest Price) Bid

### 4. Single Tender Enquiry

This approach is adopted when the availability of wanted goods and services limited in the open market or suppliers is very limited. This method is very useful for startups having unique and innovative products. In order to enable startups, the government has also launched a special scheme "Startup Runway" for getting unique and innovative products directly from startups.

**There can be several factors such as:**

- Only a single supplier is available to the best of the knowledge of the management department's officials.
- When the acquisition of goods is urgent and necessary to purchase from a particular known source.
- When specific additional machines or spare parts are required which are only harmonious with existing procured machinery.

### 5. Electronic Reverse Auctions

Auction is what when you give a higher bid to buy the auctioneered item. Under Reverse auction, you bid a more economical price to sell your product. An Electronic Reverse Auction is a type of online auction available. Under electronic reverse auction, there is one customer (government department) and many potential traders (private companies). The sellers give lower bids to obtain business from the buyer and the bid will typically lower as the sellers negotiate with each other.

Source: [gem-portal.org](http://gem-portal.org)

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# PUBLIC PROCUREMENT FRAMEWORK IN INDIA: THE NEED FOR ENACTMENT OF A LONG OVERDUE STATUTE

AMIT COWSHISH

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**T**he term “public procurement” refers to the procurement of goods, services, and execution of works by the government departments and organisations functioning under their administrative control. There is no specific law governing public procurement in India. A Public Procurement Bill was introduced in the Lok Sabha in May 2012 and referred to the Standing Committee on Finance. But no report was submitted by the committee and the bill lapsed in 2014 with the dissolution of the 15th Lok Sabha.

The 2012 Bill envisaged an overarching framework to regulate the procurement of goods and services costing over Rs 50 lakh by the central ministries, departments, public sector enterprises, and autonomous and statutory bodies. Its objective was to ensure transparency, accountability and probity in the procurement process, fair and equitable treatment of bidders, and promotion of competition, efficiency, economy, integrity, and public confidence in the public procurement process.

The issue resurfaced three years later when, presenting the Union Budget for the Financial Year 2015–16, then Finance Minister told the Parliament that “malfeasance in public procurement can perhaps be contained by having a procurement law and an institutional structure consistent with the UNCITRAL model”. Some reports indicate that the Public Procurement Bill, 2015 was subsequently drawn up, but it is unclear whether this Bill was introduced in the Parliament. In any case, this law never got enacted.

In the absence of any specific law, public procurement and other related financial matters are governed by the General Financial Rules, 2017 (GFR 2017) promulgated by the Ministry of Finance (MoF). These rules are applicable to all central ministries and their attached and subordinate bodies. These are also deemed to be applicable to the autonomous bodies which do not have their own government-approved

financial rules.

It is noteworthy that the GFR 2017 is not applicable to the Central Public Sector Enterprises, including the Defence Public Sector Undertakings (DPSUs), which generally follow their own individual rules and procedures, approved by their respective Board of Directors. However, all these are largely inspired by, and conform to, the public procurement principles laid down in the GFR 2017.

The GFR 2017 allows ministries and departments, other than the MoF, also to issue instructions on specific aspects of the public procurement policy. For example, the Public Procurement (Preference to Make in India) Order, 2017 was issued by the erstwhile DIPP (now renamed Department for Promotion of Industry and Internal Trade, or DPIIT) under Rule 153 (iii). This order requires preference to be given to the local companies in the matter of public procurement.

Rule 15 of the 2017 Order directs the administrative ministries to issue instructions to the government companies and other procuring entities under their control which are not governed by the GFR 2017 to comply with the said order. Accordingly, the Department of Defence Production (DDP) has issued several instructions to give effect to the policy and procedure envisaged in the 2017 Order. These instructions are applicable to all procuring entities under the administrative control of the Ministry of Defence (MoD), including the DPSUs and Ordnance Factory Board (OFB).

As alluded to earlier, the GFR 2017 does not deal exclusively with public procurement. However, the policy and procedure of public procurement set out in the relevant chapters, of the GFR 2017 are too general to be of much practical use, especially for managing complex procurements. To overcome this limitation, the procuring departments are permitted by Rule 142 to issue detailed instructions broadly in

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conformity with the general rules contained in Chapter 6. Under this enabling rule, the MoF has issued three manuals for the guidance of the procuring departments other than those which have issued their own instructions. These manuals are followed by the ministries and departments which do not make large scale, or complex, procurements. Since the GFR 2017 and MoF manuals do not address the complexities of defence procurement, the MoD has promulgated separate manuals under the aforesaid enabling clause in the GFR 2017, though this is not specifically mentioned in all the MoD manuals.

The main, currently applicable, MoD manuals are: (a) the Defence Acquisition Procedure 2020 (DAP 2020) for procurement of capital goods and services, (b) Defence Procurement Manual 2009 (DPM 2009) for revenue procurement, and (c) Defence Works Procedure 2020 (DWP 2020). The first two govern capital and revenue procurement for the armed forces and the Indian Coast Guard, while the DWP 2020 applies to the execution of civil works by the Military Engineer Services.

The OFB, Defence Research and Development Organisation (DRDO), Border Roads Organisation (BRO), and all the nine DPSUs have their own procurement manuals. Besides these manuals, there are some isolated instructions that regulate miscellaneous expenditure, as on acquisition of land.

A question often asked is whether instructions issued by the Central Vigilance Commission (CVC) are applicable in addition to, and supersede, the instructions contained in the above-mentioned manuals. It is difficult to answer this question in yes or no. The ministries and departments are supposed to incorporate all the relevant CVC instructions in their manuals, by customising them, if necessary, to suit their requirement. Therefore, the personnel responsible for procurement need not worry about the CVC instructions issued prior to the promulgation of a particular manual. However, this too is not categorically mentioned in all the manuals.

As for the instructions issued by the CVC after the promulgation of a manual, the position is worrisome. To illustrate, Para 2 (b) of the DAP 2020 provides that in the “event of enactment of new legislation or change or amendment or enforcement of any Act or

Law or Policy, rules or regulations or guidelines of MoD or Government of India or body such as Chief Vigilance Commission (CVC), which becomes effective after the date of last amendment to this DAP, the same will automatically be deemed as replacement to the one referred to in this DAP”.

This is unfair. The MoD must assume the responsibility of amending the relevant provisions of the manuals which are affected by any instructions issued by the CVC after their promulgation. The procurement personnel cannot be expected to check at every stage if CVC has issued any instruction which has a bearing on the activity they may be carrying out at the given point of time. Moreover, many times, the CVC instructions need to be customised before these can be implemented.

Be that as it may, within the framework of the fundamental principles and rules of public procurement set out in the GFR 2017, the individual ministries, including the MoD, enjoy full freedom to evolve the procedures that address the needs and complexities of procurement carried out by them, as in the case of defence procurement. The question is whether those principles and rules are anachronistic and come in the way of the MoD evolving a more efficient procurement procedure that meets the armed forces’ aspirations.

It would be wrong to aver, as many do, that the fundamental architecture of public procurement itself is flawed. It may sound overly simplistic, but the procurement principles and rules are based on common sense and can be reduced to a few axioms. The problem is that these axioms are not very systematically and clearly enumerated in the GFR 2017. Enactment of the long overdue statute on public procurement can help remove the ambiguities about these axioms and draw the boundaries more clearly within which individual departments could evolve bespoke procedures.

The content of this article is intended to provide a general guide to the subject matter. Specialist advice should be sought about your specific circumstances.

Source: Dua Associates

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## WTO UPDATE

### WTO OFFERS UNIQUE FORUM FOR DIALOGUE ON GLOBAL SUPPLY CHAIN ISSUES

DG OKONJO-IWEALA

**T**he WTO can play an important role in strengthening global supply chains and helping promote economic recovery from the COVID-19 pandemic and other global challenges, WTO Director-General Ngozi Okonjo-Iweala said at a Global Supply Chains Forum held virtually on 21 March.

The Global Supply Chains Forum brought together WTO members and representatives from shipping, trading, express delivery and logistics companies to share perspectives on the causes of continued supply chain disruptions and to work together on ways to mitigate their impact on global trade and post-pandemic economic recovery.

The pandemic has caused continued supply and demand pressures, congested ports, shipping logjams, rising inflation, increased freight rates and shortages that are disrupting global trade, participants underlined. The conflict in Ukraine has also led to severe disruption of supply chains particularly in grains, metals and energy products. Other factors cited by shipping lines, port officials, shippers and analysts as hampering supply chains were labour shortages, land-based bottlenecks and underinvestment in infrastructure.

In her remarks to the Forum, the Director-General noted the WTO “offers a unique forum for global dialogue on supply chain issues,” as witnessed during the ongoing pandemic, when the WTO helped governments and businesses identify bottlenecks and reduce export restrictions affecting the production and distribution of COVID-19 vaccines.

“It’s worth taking a moment to remember that the issues we are working to solve are problems born of success,” the DG said, noting that “many of the problems we were grappling with then – and now – are the result of more goods moving across borders than ever before.”

Nevertheless, “much like the WTO itself, our supply chain infrastructure needs to remain fit for purpose,” she told participants. “It is clear that equipping our supply chain infrastructure to cope better with sudden changes demands action – and investment, both public and private.”

The current system “was not built for a world where a climate disaster can interrupt factory operations worldwide, or a microscopic virus can upend the movement of goods, services and people almost overnight,” she added. “This is no case for a retreat from trade, which helps us adapt to those and other shocks.”

The Director-General said that even before the latest crisis facing global trade – the outbreak of war in Ukraine - supply chain disruptions triggered by the COVID-19 pandemic and stimulus-driven demand for goods were weighing on global trade, economic growth and price stability.

Some private sector representatives suggested that government actions which restrict the flow of goods, services and data were also contributing to sclerotic performance of global supply chains. Several participants also complained that smaller companies had less bargaining leverage and were subsequently disadvantaged in transport and logistics markets.

The supply chain disruptions jeopardize the flow of goods across the world and weigh negatively on the post-pandemic economic recovery, particularly on poor countries, small and vulnerable economies, and landlocked developing countries, they said.

The Forum looked into how the WTO can help strengthen global supply chains and how further collaboration among partners across regions and sectors can make supply chains more sustainable and inclusive. In addition to its monitoring function, the Director-General noted that the WTO can contribute



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by enhancing trade facilitation, supporting the quick clearance of goods at borders and promoting further liberalization of trade in transport and logistics services to bolster supply chain infrastructure.

“I always say that the global trading system of the 21st century needs to deliver for people everywhere,” the DG said. “Making supply chains work better is part of that.”

The Director-General noted the supply chain crunch has hit smaller firms particularly hard, given their narrower margins and more limited financial resources. “Poor countries, small and vulnerable economies and landlocked developing countries risk being pushed out of global value chains, or finding it even harder to break into them,” she added.

Pamela Coke-Hamilton, Executive Director of the International Trade Centre, echoed the concerns of the Director-General concerning the impact on smaller firms and developing economies, which include a sharp decline in the availability of inputs, a “precipitous” decline in demand for their outputs, export barriers and reduced logistics services.

“It’s been a devastating two years for small businesses, especially in developing countries, and current events suggest we have an even more difficult few years ahead,” she said.

Participants said a broader and deeper investment in digital technology — including blockchain and robotics — is one key to reducing global supply chain congestion. Diversification of markets and investment - both public and private - are among the tools put forward by participants.

John Denton, Secretary General of the International Chamber of Commerce, cited digitalization as an issue that “must be addressed” in order to strengthen global supply chains.

“If you want resilience, you’ve got to ensure access to digital skills, but also digital platforms,” he told the Forum. “That also means you’ve got to make some bold reforms in terms of the digital economy.”

“We’re still a long way away from digitalizing trade flows,” particularly with regards to trade finance, added Victoria Claverie, Head of Trade in Europe for Standard Chartered.

Many participants stressed that all partners in global supply chains will need to work together to ensure successful decarbonization efforts are supported. Sound government policies were also crucial in this regard, according to many speakers.

Clemence Cheng, Managing Director in Europe for Hutchison Ports, said the WTO and other international organizations can contribute by serving as a knowledge bank on supply chains in order to anticipate problems earlier and encourage greater public-private sector cooperation.

Several officials stressed the importance of trade agreements in facilitating supply chains. Luz María de la Mora Sánchez, Mexico’s Undersecretary for Foreign Trade, said the WTO’s Trade Facilitation Agreement has been “key and crucial” in addressing supply chain disruptions, while Gambia’s Minister for Trade, Seedy Keita, underlined the importance of the new African Continental Free Trade Area in helping to boost trade and reduce trading costs in Africa.

Closing the event, Deputy Director-General Jean-Marie Paugam said: “No supply chain can properly operate without a global system of predictable and facilitating trading rules, such as the one the WTO operates. But these rules alone can do nothing for trade if supply chains are being physically interrupted. All constituents of the world trading system - from the private sector to governments, regulating authorities and international organizations - must now play their part in a response.”

Deputy Director-General Anabel González – who also closed the Forum – said that enhanced global trade will help strengthen global supply chains and called on the global community to coordinate actions “to equip supply chains to deal better with growing threats and rising uncertainty.”

The Forum was preceded by a meeting between DG Okonjo-Iweala and representatives from over 20 governmental and private sector organizations, including the Association of Southeast Asian Nations, the Global Shippers Alliance, Hutchison Ports, IKEA, the International Air Transport Association and PSA International.

Source: WTO Website





## “SUPPLY CHAIN RESILIENCE MANAGEMENT CAN MITIGATE DISASTROUS CONSEQUENCES OF RISKS”

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**I**ntroduction : Supply Chain Management is about Managing Chain of Supplies. One small disruption to the supply chain can quickly wreak havoc on the entire supply chain. A Supply Chain Disruption is any Event that Causes a Disruption in any of the Activities in the Chain of Supplies like Sourcing, Purchasing, Production, Sales or Distribution of Products or Services and various other Associated Functions. As a result of Supply Chain Disruptions Supply Chain Risks may arise. In this article “**Supply Chain Resilience Management Can Mitigate Disastrous Consequences of Risks**”, let’s Discuss Supply Chain Related Risks & How to Develop Resilience Plans to Address Supply Chain Risks to minimise impacts of Risk.

Risk can be characterised as **Uncertain Future Event that if occurs has either Positive or Negative Outcomes**. That means there are Two Sides to Risk : Positive or Favourable Impact on Objectives also called as **Opportunity** and **Negative or Adverse Impact** that is **Threat**. In this article we shall discuss about Adverse Impacts that Risks the Supply Chain.

**Keywords :** Supply Chain Management, Supply Chain Disruption, Supply Chain Risks & Resilience Management, Supply Chain Risk Assessment, Risk identification, Good Governance.

**Supply Chain Risks :** Supply Chain Risk is “anything that Interruptions, Disrupts or Impedes to the Flow of Supplies – Goods or Services or Information Flows from the Point of Origin to the Destination Point that is till it reaches to the Ultimate End-User. Some of the Supply Chain Risks in the Business are Charted below:



Causes of Supply Chain Disruption or Risks including events such as Pandemics, Natural Disasters, Product / Process Problems (Quality Issues, M/C Breakdown, Sudden Halting / Fall in Production due to Accidents; Unexpected Surge in Capacity etc.), Drastic Price Fluctuations, Cyber Attacks, Logistic Failures & Delays, Supplier Bottlenecks, Regulatory Issues, Geopolitical Instability (War, Civil Disturbances, Terror Attacks, Strikes etc).

**Some Supply Chain Disasters: Natural Disasters in Asia from 1970 to 2019** recorded 3,454 disasters with 975,622 lives lost and **\$2 trillion reported in economic damages**.

The **Ever Given**, the massive container ship that was horizontally wedged in the **Suez Canal** blocking off all traffic for nearly a week in the Month of Mar'2021. In 2020, more than **50 ships per day on average passed through** the 120-mile long waterway, accounting for **around 12% of global trade**.

The COVID- 19 Pandemic has disrupted lives across all countries and communities and negatively affected global economic growth in the last Couple of years and still continuing with one wave after the other and one variant after other. In **World Economic Outlook**, The International Monetary Fund (IMF) estimates global **Businesses lost an estimated \$28 trillion in 2020 due COVID- 19 Pandemic**.

On the supply side, shortages reflect lingering disruptions to labour markets, production and supply chain bottlenecks, disruptions in global energy markets, and shipping and transportation constraints that are adding to inflationary pressures. Though some Economies started recovering, but resurgence hopes are getting doped with reoccurrence of COVID again in major parts of China and other countries. The COVID-19 pandemic is again rearing its head on the opposite sides of Eurasia after a lull, with both, China and Europe reporting a rise in cases, according to media reports. New Zealand too is facing a resurgence in cases. The recent lockdowns imposed by China to battle another wave of the coronavirus pandemic and tough lockdown measures at its key manufacturing hubs in Shenzhen, Dongguan and Changchun as well as at Shanghai will

disrupt global supply chains and hit steel, automobile, electronics, FMCG, Pharma, Food Companies and plaguing all many more Industrial & Service Sectors across Global Economy.

**Future Still Uncertain : During the COVID Period All are Not Well & Still Future is Very Uncertain with many latest events Rocking Global Supply Chains. Russia-Ukraine War, Sanctions on Russia, combined with the China-U.S. trade war and many associated events worldwide have triggered disruption of the global supply chain.** Major changes in global markets and the macroeconomic climate also threatened Supply Chain - hampered factory operations and sown chaos in Global Shipping - Poor connectivity- demand for shipping has outstripped the availability of containers – Damaged many economies around the world. We have seen Shortage & Stockout Situations for many items including very Essentials like Food, Groceries, Household supplies, Medical, Personal Protective Equipment's (PPP), Cloths and so on. With Lead Time Issues, Uncertain Demand & Deliveries – **All the Supply Chain Targets & Measures gone awry.** Govt. Regulations / Restrictions for Mobility, Lockdowns, Increased border controls and customs regulations; Shortage of Containers & Shipments result in longer wait times, and lack of capacity for long-haul and last-mile fulfillment etc apart from overall Economic slowdown, Short Supplies, Labor Non-availability, Health Issues and Severe Financial Crisis created extreme challenges - **challenges of keeping the businesses running & keep them stable.**

**Consequences of Supply Chain Disruptions :**

Supply Chain Disruption may lead to Risks in terms of

- Ø Delivery
- Ø Quality
- Ø Costs
- Ø Service
- Ø Supplier & Customer Relationships

These Factors Reflect as Decreased Productivity, Increased Costs, Non-Availability of Inputs & Raw Materials, Delayed Deliveries or Non-Deliveries, Stockouts and Loss of Revenue, as well as Loss of Customer Trust - Rising Customer Dissatisfaction; Cash Flow & Financial Problems, Closure of Businesses or Insolvency, and more and many Economic Fall outs.

The increased frequency or incidences and the severe consequences of the recent past and ongoing supply chain disruptions have resulted in disastrous and devastating impact on global trade so that it has **exposed the Fragility of the Supply Chain** and proved to be a real test of corporate **Ingenuity, Resilience and Flexibility to face the Crisis.**

**Therefore, an increasing interest and necessity become evident in Managing Risk & putting in place an effective supply-chain risk-management governance and mitigation mechanism for businesses**

**to build Time Relevant Shot / Long-term Resilience in their value chains for managing future challenges.**

**Supply Chain Resilience:** Resilience is a Crucial Characteristic of any Business to sharpen the focus and create an environment to combat uncertainties in the event of adversities and difficult situations. Supply chain resilience is about a systematic process of managing and adapting to the unknown across the whole spectrum of risk - Dynamics, Complexity, and Uncertainty in Supply Chains. It is **“the ability of a supply chain to both Resist Disruptions and Recover Operational capability after disruptions occur.”** That means having the capability to resist or even avoid the impact of a supply chain disruption – and the ability to quickly recover from a disruption.

Supply chain resilience refers to an organization's **ability to use its resources to handle unanticipated supply network disruptions. In other words, it is the ability to respond to and recover from challenges without disrupting operations or deadlines.**

**Supply Chain Risk Assessment Process:**

Supply Chain Risk Assessment Process is a Systematic Approach having following 8 Steps

- Ø **Analyse Business & Business Environmental Factors.**
- Ø **Map Supply Chain Network with Risk Factors.**
- Ø **Identify & Assess Risks.**
- Ø **Find Critical Supply Risk Factors & Analyze Impact.**
- Ø **Develop Strategy & Action Plans.**
- Ø **Implement & Institutionalize Best Practices & Strategies.**
- Ø **Review Risks Periodically & Take Corrective / Preventive Actions.**
- Ø **Good Governance & Continuous Improvement.**



## 1. Analyse Business & Business Environmental Factors

Business Analysis is Process of Continuously and Dynamically Assessing a Business to constantly identify & monitor business areas that can be improved to increase efficiency and strengthen business processes and also implement changes. Business analysis is used to identify and articulate

the need for change in how organizations work, and to facilitate that change.

The term '**Business Environment**' connotes external forces, factors and institutions that are beyond the control of the business and they affect the functioning of a business enterprise. These include **customers, competitors, suppliers, government, and the social, political, legal and technological factors** etc.

By Assessing both Internal & External Factors impacting business is Essential First Step proceed with Supply Chain Risk Assessment.

## 2. Map Supply Chain Network with Risk Factors Mapping your Supply Chain Network with Risk Factors. Conduct Global Scenario Planning.

**Map Out Your Supply Chain** to get a clear understanding of which entities are most vulnerable to risk. **Identify Sources of Risk** – both External & Internal and Document.

### Ø External Supply Chain Risks

- v Demand Risks
- v Supply Risks
- v Environmental Risks
- v Business Risks

### Ø Internal Supply Chain Risks

- v Manufacturing Risks
- v Business Risks
- v Planning and Control Risks
- v Mitigation and Contingency Risks

**Identify Critical Suppliers in Affected Areas & Assess the Risk Involved in the Entire Chain - Tier 1, 2,3 etc Extended Supply Base** - A lack of Transparency, Traceability & Accessibility relating to Second - and Third-tier Suppliers has left many firms vulnerable to shortages of critical components.

## 3. Identify & Assess Supply Risks

The **Risk Assessment** is the Process of **Identifying** and **Documenting** all known and possible risks and **Classify** them and **Rank** based on their **Risk Exposure** on supply chain and **Prioritise** them by their relative importance. Create a supply chain risk management framework

### Ø Adopt Risk Evaluation Tools to understand the areas & levels of impact.

- Ø Perform a Full Assessment of Suppliers based on factors such as **PESTLE** (Political, Economic, Social, Technological, Legal, & Environmental)

- Ø **Prioritize by Probability and Impact.** Evaluate every impossible scenario, so that you can prioritize potential risks by taking into consideration likelihood they could actually take place and its

impact. Then estimate the financial and brand impact of each event. Develop mitigation contingency plans, starting with the most likely and highest-impact risk scenarios.

- Ø **Be Aware of Suppliers' Risks.** Be aware of risks your suppliers may face, including supply risks due to Pandemics, regulations compliance, country risk, economic and political conditions or anything that may impact their ability to serve you.

During Risk Assessment, be sure to consider:

- Ø **Uncertainties, including both Known & Possible Risks**
- Ø **Sources of Risk**
- Ø **Events**
- Ø **Likelihood of Events**
- Ø **The Consequence of those Events**
- Ø **The Effectiveness of Current Controls**

## 4. Find Critical Supply Risk Factors & Analyze Impact

Through Quantitative Risk Assessment and methodologies, a formal and systematic risk analysis can be made to quantifying the risks associated in the entire Supply Chain with given the parameters defining them. Sensitivity analysis tools: scenarios, mathematical, statistical and graphical analysis may be used and Finally Critical Supply Risk Factors may be Found.

## 5. Develop Strategy & Action Plans

After finding Critical Supply Risk Factors a Strategy may be Developed to address the Supply Chain Risks. In the Present Turbulent Business Environment following Strategies are Suggested :

- Ø **Build a Supply-chain Risk-Management Framework – Your Strategy**

- Ø **Develop Risk Response Plan (Strategy)**

- Ø **Introduce Agility into Supply Chain.** The **Agile Supply Chain** basically refers to the use of **responsiveness, competency, flexibility, and quickness to manage how well a supply chain entity operates on a daily basis.** Agile supply chains can adapt to meet unpredictable customer demand in a rapidly changing and volatile trading environment. Agile supply chains have the capacity to produce a broad product range with a fast turnaround time.

- Ø **Create a Supply Chain Emergency / Contingency Plan** - Carefully document all processes and create a single source of truth that employees can refer to when executing on your contingency plan.

- Ø **Avoid Single Sourcing and Shift to Alternative Sourcing or Multi-Sourcing :** Multiple Suppliers - **Monitor Potential Disruptive Risks and Develop Alternate -Sourcing Strategies** for Critical Items. -



businesses should take the consideration and responsibility of creating strategic cost-benefit analysis on the additional cost of sourcing from other suppliers - supply areas or nations.

**Identify Alternative or Backup Suppliers** - Create a Plan B, Plan C, Plan D, and so on. Diversify Supply Base and Supplier Network so that you aren't reliant on a Single Supplier and from Single Location. Qualification of more suppliers - Assist to critical suppliers to Qualify as Pre-Qualified Suppliers.

Ø **Avoid Single Country Focus (like China Centric) and Plan for Suppliers from Different Geographical Locations.**

Ø **Shift from Offshore (Global Sourcing) to Nearshore (Local & Nearby Countries) to Sureshore.**

Sureshoring – the ability to source goods or services from multiple locations so as to avoid having a **Single Point of Failure.**

Ø **Diversify Customer Base** : Domestic Market, Exports, Customers from Different Regions or Groups

Ø **Develop Stronger Association with Supply Chain Partners.** Good Supplier Relationships Create Opportunities. Especially Strengthen Logistic Service Capabilities with stronger tie-ups with Logistic Partners. Also Evaluate Alternative Logistics Options and Prepare for Potential Channel Shifts.

Ø **Create Backup Plans** and Test for Supplier's Outage - Create Backup Plans like inhouse manufacturing or alternative manufacturing methods

Ø **Build up Inventory.**

Build Buffers for Inventory and Capacity

Ø **Pause Just in Time (JIT) approach** for Time being and **Shift to Just in Case (JIC)**

Ø **JIT** operations receive inventory only as it's needed for production (**Pull**), whereas **JIC** stocks up inventories ahead of time (Based on Certain Forecasts – (**Push**)).

Ø This move expands companies' focus from **Optimizing Efficiency to Managing Risk.**

Ø **Empower Employees to Make Decisions** – Faster, Swift and Informed Decisions.

Ø **Establish a Crisis Response Team to make Critical Decisions in the Event of an Emergency.**

Ø **Digitalize Supply Chain : Integrate a digital system into your supply chain**, which will enable it to be demand-driven. With the use of a digital system, you can respond to sales, and adjust your value

chain based on these sales.

Ø **Improve Supply Chain Visibility** - Increase use of advanced data analytics to improve the efficiency of supply chain management

Have End-to-End Visibility is Important to Dig Down the Details. Align IT Systems & Support to Evolve Work Requirements. Supply chain visibility is **the ability to Track different goods and / or Products in Transit**, in the Inventory or in the Process - giving a **clear view of the Inventory, Production Scheduling, Material Movement & Tracking, Customer Services, and Proactive Status Updates.**

Ø **Stay up to date on Current Events and Adapt your contingency plan accordingly.**

Ø **Establish Timely Communication** with key Customers, Suppliers and other Stakeholders.

Ø **Conduct a Supply Chain Vulnerability Audit - Audit Suppliers & Service Providers based on their disaster plans.**

Ø **Institutionalize Good Practices - Governance and Regular Reviews.**

Ø **Built a Risk-Aware & Resilience Culture** - Culture Binds an organization, blending its DNA, Legacy, Mission, Processes & Leadership - acts as a key lever during crisis enabling Collaboration and taking Informed Decisions Timely & Proactively. **Resilience Culture opens up people's mind to different Tactics and Strategies to tackle difficult and uncertain situations.** Supply-chain resilience requires a risk-aware culture to help an organization establish and maintain strong defensive layers against unknown risks, as well as respond more quickly in the event of a severe crisis or operational threat.

Ø **Build Supply Chain Talent** - Risk-Awareness Culture and Ability to Face Risks & Quickly Respond to Risks, isn't built overnight. Businesses must Nurture it through Educating Employees and Critical Suppliers, Training on ability to face disruption and how to react and find contingencies.

Ø **Prepare Succession Plans** for Key Executive Positions and Develop & Encourage **Multiskilling to Avoid Single Point of Failure**

**6. Implement & Institutionalize Best Practices & Strategies**

**Strategy Implementation** is the activities within a workplace or organisation designed to manage the activities associated with the delivery of a strategic plan. "**Institutionalization**" refers to the successful integration and assimilation of the actions required bring the required changes. Supply Chain Risk Management Strategy implementation requires

organisations to put initiatives in place which are focussed and realisable to address the Risks. A strategic focus should encourage an organisation to develop disciplined processes for feeding strategic initiatives across the organisation in a meaningful, realistic and achievable way to face the challenges posed by risk events. Strategy implementation is the process by which an organisation translates its chosen strategy into action plans and activities, which will steer the organisation in the direction set out in the strategy and enable the organisation to achieve its strategic objectives.

For Successful Implementation of the Strategies ensure that plans are aligned with organisational mission, vision and values; Build an effective leadership team with Agile & Responsive Mind Set; Create an Implementation Plan to Quickly put into Action when Required; Allocate budgetary resources; Assign objectives and responsibilities; Align structures and processes; Align people; Communicate the strategy; Review and report on progress; Make strategic adjustments as necessary; Develop an organisational culture that supports the strategy.

## 7. Review Risks Periodically & Take Corrective / Preventive Actions

Monitoring is one of the critical success factors in identifying risks that may damage an organization. Periodically Review Supply Chain Risks identified in the firm's risk register. Document any actions or events that change the status of a risk. and define mitigating actions, improving the resilience and agility of the supply chain.

A corrective and preventive action procedure is the process which a company takes when a specific task, activity, outcome or non-conformance has an issue which can be rectified or improved.

## 8. Good Governance & Continuous Improvement

Good Supply Chain Governance ensures that all necessary resources are in place and that individuals or teams are working on agreed priorities, progressing to agreed time scales, and delivering the required benefits by conforming to Regulatory, Social, Environmental and Ethical Practices the Organization. It also ensures that the Supply Chain Governance program and program progress are well communicated and reported across the organization and ensuring that those Good Practices are followed. It involves the active streamlining of a business's supply-side activities to maximize customer value and gain a competitive advantage in the marketplace.

**Continuous Improvement** in Supply Chain

Resilience means the ongoing improvement process of improving capability of the Organisation to resist or even avoid the impact of a supply chain disruption – and the ability to quickly recover from a disruption.

Supply Chain Good Governance focuses on

- Ø Governance Framework for Decision Making; Team Involvement; Communication; Ground Rules for Practice & Ethics
- Ø Collaborative Planning & Informed Decision Making,
- Ø Policies in line with Law and Applicable Regulations,
- Ø Risk Assessment and Mitigation Plans,
- Ø Performance Expectations, and Compliance Metrics,
- Ø Corporate-wide visibility to Plans Vs Actual execution key initiatives incorporating supply chain governance factors and contract compliance patterns.
- Ø Tracking and reporting the status of initiatives and key measures of supply chain governance across internal customer departments; external vendors, suppliers, carriers, intermediaries, and providers; and key company stakeholders.
- Ø Establishing continuous process improvements based on closed-loop monitoring and control of spend and compliance patterns.

## Conclusion

Supply-chain resilience requires a risk-aware culture to help an organization establish and maintain strong defensive layers against unknown risks, as well as respond more quickly in the event of a severe crisis or operational threat. Put in Place Supply Chain Risk Framework. Also frequently Conduct a Supply Chain Vulnerability Audit - Audit Suppliers & Service Providers based on their disaster plans. Addressing timely risks in supply chain can averse & mitigate disastrous consequences.

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# SMART MANUFACTURING = AUTOMATION+INTELLIGENCE

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**Industry 4.0:** Industry 4.0 is the next step in the evolution of technology in the industry. In the last century, manufacturing technology progressed from Henry Ford's assembly line to computerization — taking physical data and digitizing it. Then automation was introduced, and now, with Industry 4.0, value is being added through artificial intelligence (AI), autonomous systems, and analytics. Smart manufacturing employs these technologies to drive greater efficiency and productivity in manufacturing across industries. The backbone of this digital transformation consists of Industrial Internet of Things (IIoT) systems that instruct, manage and monitor machines, equipment, processes, and supply chains. Today, sensors, machine-to-machine communications, AI, machine learning, augmented reality, and sophisticated analytics drive improvements across the industrial value chain through real-time operational data and insights in a smart manufacturing environment. Combining these technologies requires data orchestration — the capture, transformation, and delivery of relevant data — into each of these processes.

**Smart factory:** A Smart Factory allows the minimization of production process times, as well as its costs, as it can adapt and optimize the processes in addition to storing and analyzing a large amount of data in real-time. This results in a more flexible, efficient, and autonomous production by making people focus more on improving processes and not so much on repetitive tasks, providing great value. Cloud monitoring, Internet of things, digital twins, Robot, cyber security, virtual and augmented reality and big data are technologies and tools that will help and allow them to control, analyze and improve production and plant times:

**Traditional industries face several challenges and their digitalization can be defined in 4 steps:**

- Companies should see digitalization as an opportunity instead of as a threat, as it allows them to improve efficiency and reduce both production time and costs.
- Once the needs are identified, the objectives and

strategic plan must be defined to address change. These can include: optimizing internal processes, increasing sales, reducing costs...

- Define the internal team that will lead the project. This team should consist of specialists with deep knowledge regarding the business and all its processes.
- It is important to recycle and actively involve the entire workforce, i.e. companies must set up a plan to either train their employees or hire new staff. The transformation is absolute and involves all workers and internal processes.

Digitalising an industry brings with it numerous benefits that affect the planning, quality, and development of products and logistics in the supply chain. Here are the most important competitive advantages:

- Speed and flexibility in the face of the unforeseen.
- Real-time digital and physical connection through sensors and IoT devices.
- Resource optimization.
- Reliability of stored data.
- Two-way data flow between elements.

**IoT applications of a smart factory:**

**IT and OT integration: Simplify integration and deploy the management**

Boost the company's productivity with automation, robotics, and augmented and virtual reality, all enabled by data orchestration and networking. IIoT platforms integrate **traditional IT** functions with those of **operational technology (OT)** to transform factory floor operations. These platforms integrate legacy machines and sensors into IT systems and introduce edge intelligence, a critical ingredient of IIoT success. 5G accelerates this transformation by eliminating cabling and enabling ultra-reliable, mission-critical wireless communications for IIoT use cases and applications that require minimal latency and real-time communication.

**Process optimization: Connect the shop floor to the top floor natively and directly with an Industrial IoT**

## platform

Improve factory operations to get the greatest return on investment. Smart factories create efficiencies and new capabilities that help manufacturers improve productivity, reduce costs and identify new revenue opportunities. With real-time **overall equipment effectiveness (OEE)** visualization tools that offer data collection and transformation, you can have full visibility into your factory's efficiency.

### **Predictive maintenance and condition monitoring: connect your equipment easily to prevent unplanned downtime**

Monitor the condition and performance of connected machines and assets to improve asset availability and performance. Sensors on factory equipment transmit critical data regarding equipment health and utilization. This feedback helps manufacturers maximize equipment uptime, avoid operational disruptions, improve maintenance efficiency, reduce costs and boost productivity.

### **Supply chain and warehouse management:**

Optimize production and avoid costly disruptions with real-time visibility throughout the value chain. Supply chain management requires end-to-end visibility of raw materials and finished goods at all production and delivery stages to be effective. IIoT solutions for supply chain management enable production managers and suppliers to adapt quickly to changes that affect availability, fine-tune warehousing, better manage assets and inventory to meet demand, and monitor the status of raw materials and goods in transit.

**Improved quality control:** When it comes to the smart factory, manufacturers large and small need solutions that provide vertical and horizontal integration, making it easier to connect the factory to inbound and outbound supply chains.

**Smart manufacturing:** Smart manufacturing is a combination of various technologies and solutions, including artificial intelligence (AI), robotics, cybersecurity, Industrial Internet of Things (IIoT), and blockchain that are implemented into a manufacturing ecosystem to optimize manufacturing processes by generating and/or accepting data. Smart manufacturing design is founded on an IIoT method for process analysis. Data analytics can showcase what is needed for a more efficient, transparent, flexible, and ultimately profitable production process. The purpose of smart machines and smart systems is to streamline operations through process enhancement and the automation of certain

manufacturing systems. Smart manufacturing is all about collecting and properly utilizing information, and as such, cybersecurity is crucial to the success of smart factories.



*Image1: Role of data-driven intelligence in smart manufacturing*

Source: J.wang et al/Deep learning for smart manufacturing: Methods and applications

IIoT uses data communication systems to connect every device, machine, and process. Each piece of industrial equipment contains sensors that can generate any relevant data and send it through those data communication systems to the cloud or the appropriate software system. Robots with AI capabilities are also being implemented in many manufacturing ecosystems. Typical manufacturing plants have previously employed robots programmed to do single tasks. Now, with smart manufacturing, intelligent robots are on the shop floor, connected with implanted sensors to get data and adjust their actions accordingly. These AI robotics enable perception-based decision-making, something that was previously impossible with only rule-based algorithms. AI can also be applied to smart manufacturing for predictive maintenance, used to discover machine performance, equipment breakdowns, and any operating conditions in real-time. Digital twins are another part of smart manufacturing, which involves creating a virtual copy of an asset, system, or process using data from system and asset sensors along with algorithms to make data-based process projections. Predictive maintenance systems utilize digital twins as they lead to reductions in time and cost of new product development and eradicate any unplanned downtime. The increased use of IoT platforms, cloud platforms, 3D printing, and 3D simulation software all inspire digital twin adaptation.

**Smart manufacturing technology drivers:**  
**Augmented Reality (AR):** Augmented reality is a technologically enhanced version of reality. AR works by using technology to overlay digital information on an image of something being viewed. These images are usually viewed through smartphone cameras or



smart goggles. AR allows monitoring of fatigue levels, reduces injury risk, and improves employee safety.

**3D printing:** 3D printers speed up manufacturing processes. Thanks to the innovative use of new printing material available today, 3D printers will allow manufacturers the flexibility to manufacture new products cost-effectively.

**Intelligent sensors:** Sensors today are highly advanced. They can make sense of complex data that allows machines to perform to their fullest capability, eliminating the need for remote processing whilst increasing the productivity and efficiency of smart machines.

**Connectivity:** For smart manufacturing to work, connectivity is a very important aspect. The connectivity solution will need to manage, aggregate, buffer, and process data, and that too in a secure manner. Manufacturing processes can be connected by a Personal Area Network (PAN), Local Area Network (LAN), Wide Area Network (WAN), Virtual Private Network (VPN), or Metropolitan Area Network (MAN). Each network has different strengths and ideal use cases and a strong partner with experience in connecting smart manufacturing systems can help decide which connectivity solution is best.

**Automation:** Robotics and artificial intelligence (AI) is expected to play a major role in the growth of smart manufacturing. AI will assist manufacturers to inject next-level automation into their processes. Software-based on AI can be leveraged in several areas of a smart factory, including planning, scheduling, and predictive maintenance.

**Tracking:** Keeping track of asset locations is an important aspect of manufacturing operations. Thanks to IIoT and Industry 4.0, goods and items can be tracked continuously through various systems such as supply chain management, ERP, manufacturing execution systems, and other IT systems to improve overall efficiency.

**Cloud computing:** Cloud computing facilitates the development of new products as it allows regular collaboration throughout the design process. It enables employees to prioritize important tasks. In turn, cloud computing allows smart manufacturers to connect to global locations and track the status of the product seamlessly.

**Security:** Security is a constant threat to manufacturers in India and elsewhere. Smart manufacturing envisages the use of Deep Neural

Networks to secure communication, preventing fraud. Of course, there are many other ways of ensuring cyber security as well.

Advantages of smart manufacturing:

**Efficient use of big data:** Smart manufacturing includes automated data collection and provides advanced production analytics. It provides greater access to data across an entire supply chain network. What is more, is this data in real-time? This allows managers and manufacturers to make informed decisions. Suppliers benefit as they need to supply exactly what is needed, reducing waste and any downtime associated with missing parts.

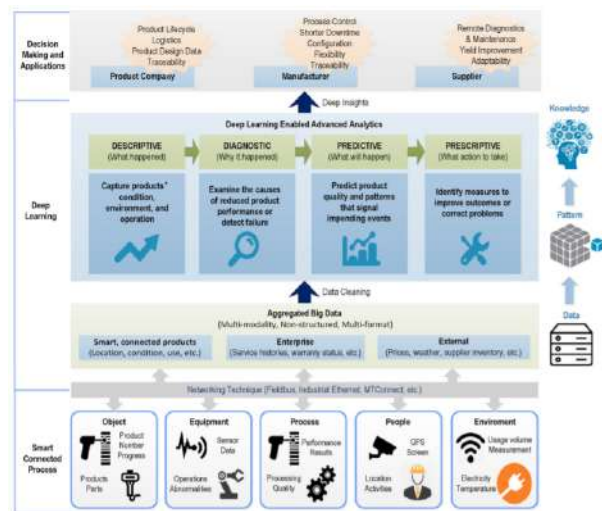


Fig. 3. Deep learning enabled advanced analytics for smart manufacturing.

**Image 2:** Deep learning-enabled advanced analytics for smart manufacturing

**Source:** Wang J, et al. Deep learning for smart manufacturing: Methods and applications. Journal of Manufacturing Systems (2018)

**Cost reduction:** Since smart manufacturers have access to real-time, big data, they can identify waste and increase forecast efficiency as they gain better insight into supply chain issues like inventory levels and delivery status. They can also forecast demand cycles with better accuracy, reducing costs related to excessive inventory or unexpected production volume.

**Improve product quality:** Big data is one of the salient features of smart manufacturing. As machines communicate seamlessly with smart manufacturing software, the data generated can be utilized to figure out what customer needs are and manufacturers can find opportunities to refine the quality of their products.

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**Mitigate workforce challenges:** Since smart manufacturing implies complete (or almost complete) automation, it reduces the dependency on human work. Since real-time access to data across multiple platforms is available, it allows manufacturers to free workers to focus on their core competencies. While smart manufacturing will reduce manual work, it will provide job opportunities for a tech-savvy workforce who will run the software and analyze the data generated.

**Business benefits of smart manufacturing:**

- **Productivity and Efficiency** - Knowledge of precisely how a plant is performing and examining that intelligent data can lead to reduced downtime and maximum plant productivity with more efficient scheduling and rapid preventative maintenance.
- **Flexibility** - Quickly adapting to changes in customer demand, reducing operating costs, and accommodating more prospects with new business verticals are all examples of the flexibility afforded by smart manufacturing. Smart manufacturing systems can accommodate various manufacturing environments and production processes and can therefore handle a variety of operational tasks. Advanced sensors technology automatically identifies fluctuation in manufacturing demand, enabling rapid supply chain response.
- **Improved Working Life** - Smart factories will likely not progress to entirely autonomous manufacturing by robots. Humans will need to remain in-house to do jobs requiring a reasoning brain or a human touch. This can improve the working life of humans in production facilities, reducing mundane tasks and opening up new and different job opportunities.
- **Worker Safety** - Gathering detailed worker, machine, and corporate data to collectively form an all-encompassing data set can afford higher degrees of overall safety and productivity through the use of intelligent automation.
- **Cost Reductions** - Identifying waste and increasing forecast accuracy are two ways that connecting operations and enterprise systems can ultimately reduce costs. Smart manufacturing can also provide better insight into inventory levels, delivery status, and demand cycles, reducing the cost of superfluous inventory.

**Conclusion:** Industry 4.0 is significantly important

because it will help the organization to make a sensible decision regarding its implementation. Smart manufacturing gives a lot of benefits, including improved efficiency, increased productivity, and long-term cost savings. In a smart factory, productivity is continuously enhanced. If a machine is slowing down production, for example, the data will highlight it, and the artificial intelligence systems will work to resolve the issue. Main savings come from the reduction in production downtime. Modern machines are often equipped with remote sensors and diagnostics to measure and alert operators hence problems can be detected early. Implementation of the initial cost is very high, so many small to midsize companies can't afford the considerable expense of the technology. Smart technology is very complex, which means that poorly designed systems could cut into profits or produce losses. With smart manufacturing, organizations can identify opportunities for automating operations and use data analytics to improve manufacturing performance.

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# SUPPLY CHAIN QUIZ

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**W**e are starting a new feature “Supply Chain quiz” from this issue of MMR. The quiz will be based on selected topics. The answers will be published in the next issue of MMR. This will give readers a zeal to search for answers which will give them an opportunity to understand the subject thoroughly. Happy quizzing!

## Quiz on GST

1. In GST parlance, a Diwali gift pack consisting of dry fruits, chocolates, and fruit juice is an example of

- (a) Composite supply
- (b) Packaged supply
- (c) Mixed supply
- (d) Complex supply

2. The tax rate applicable in case of composite supply

- (a) Tax rate as applicable on principal supply
- (b) Tax rate as applicable on ancillary supply
- (c) Tax rate as applicable on respective supply
- (d) Highest tax rate applicable

3. The maximum rate prescribed under CGST Act

- (a) 12%
- (b) 28%
- (c) 20%
- (d) 18%

4. The taxes that will be levied on imports

- (a) CGST
- (b) SGST
- (c) IGST
- (d) Both CGST and SGST

5. The time of supply of service in the case of taxable services is the

- (a) Date of receipt of consideration
- (b) Date of issue of invoice
- (c) Date of receipt of invoice
- (d) Date of entry in books of account

6. The time of supply of service in case of reverse charge mechanism

- (a) Date of payment as entered in the books of account of the recipient
- (b) Date immediately following 60 days from the date of issue of invoice
- (c) Date of invoice
- (d) Earlier of (a) & (b)

7. There was an increase in tax rate from 20% to 24% w.e.f. first September 2018. The services were provided after change in rate of tax in September 2018, but invoice was issued and payment received both in August, 2018. The applicable tax rate is

- (a) 20% as it is lower of the two
- (b) 24% as it is higher of the two
- (c) 20% as both invoice and payment were received prior to rate change
- (d) 24% as the supply was completed after rate change

8. The value of supply of goods and services shall be the

- (a) Transaction value
- (b) Maximum retail price
- (c) Market Value
- (d) Notional value

9. Tax credit on capital goods can be taken

- (a) Immediately after receipt of goods
- (b) After making payment for the goods
- (c) Once capital goods are put to use
- (d) After capitalizing in the books of Accounts

10. The capital goods sent for job work and not returned within \_\_\_\_\_ years shall be treated as supply

- (a) One year
- (b) Five years
- (c) Three Years
- (d) Seven years

●●●

# DIGITAL TRANSFORMATION OF PROCUREMENT

## TURNING PROCUREMENT CHALLENGES INTO OPPORTUNITIES.

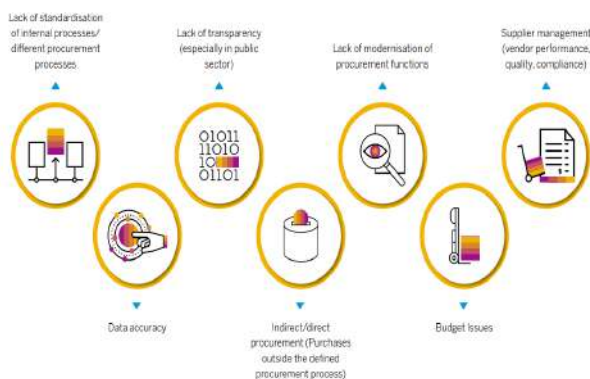
### AN INDIA STUDY.

**SUSHANTA JAYANTO ROY , SR. MANAGER - STRATEGY & INTEGRATION,  
SUSTAINABLE PROCUREMENT, MAERSK, [sushanta.roy@maersk.com](mailto:sushanta.roy@maersk.com)**

In the world hit by pandemic and geo-political complexities, markets are facing potentially dire shortages of both goods and labor. With this backdrop, a research was conducted in collaboration between IIMM and SAP, with the objective to analyze the challenges in procurement and assess the pace of digital transformation across various industries in India. And further to study how these challenges can be converted into opportunities with the help of Technology.

This article provides the summary and key findings of this survey which encompasses insights from 75 respondents – people in charge of procurement in their organizations. Out of the interviews conducted across 15+ industries in India, 37 were online and 38 were telephonic interviews.

The major procurement challenges faced by organisations in India in this Supply Chain Disruption were identified as



**Companies frequently face supplier management concerns owing to their reluctance to implement performance based scorecards**

#### Key Takeaways

Companies are frequently troubled with the issues of suppliers' performances owing to their reluctance to implement performance based scorecards developed by the company (56% of small and medium organisations). Although finding the right supplier is not much of a challenge to many organisations

**53%** of enterprise type organisations are frequently troubled with lack of risk based analysis for supplier's quality

#### Challenges Faced Sometimes

Lack of risk based analysis of supplier quality

#### Frequently Faced Challenges

Reluctance to implement performance based scorecards

#### Never Faced Challenges

Finding suitable suppliers for categories

**Priorities for Procurement:** In the next 12-24 months organisations will prioritise different attributes like sustainability and agility

#### Key Takeaways

Sustainability and agility have been mentioned as key priority areas for organisations

Several organisations have already invested in digital transformation and are waiting to complete them

According to Indian firms, in the coming years risk reduction will take precedence over cost reduction

**40%** of India's enterprise organisations have ranked cost reduction as their top priority followed by sustainability

Small and medium sized organisations have ranked cost reduction (**38%**), followed by sustainability (**31%**) and agility (**31%**) as the top priorities for procurement

Digital Transformation in Procurement

## Allocation of IT Spend

**Most of the companies surveyed have spent between 10-25% of their organisation's IT spend towards procurement**

## Automation of Procurement Function

**Only 5% of organisations have automated more than 60% of their procurement function**

#### Key Takeaways

**41%** of the organisations have automated their procurement function up to 10% while another 30% have achieved up to 25% automation

This shows that much work is left for organisations to completely switch to fully automated systems for procurement function (only 5% have achieved more than 60% automation)

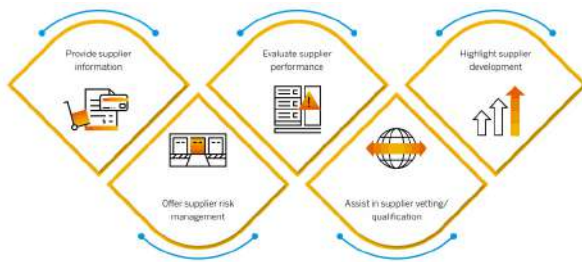
**47%** of large organisations have only achieved 5%-10% automation and only 17% of them have been successful in implementing automation of 40% and above 76% of small and medium organisations have achieved automation of 5% to 25%

might increase their technology spend in procurement in the coming year.

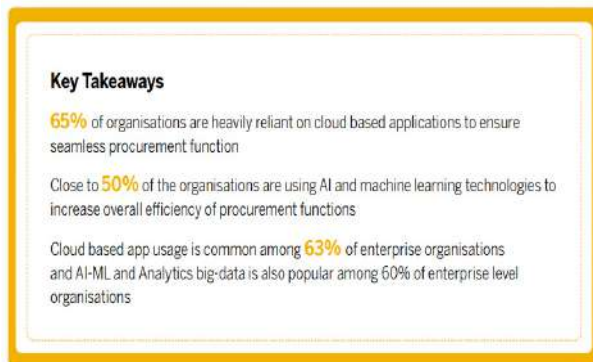
The Government and public sector have taken steps to digitalise procurement functions. Most central public sector enterprises have already implemented solutions for e-procurement, e-tendering, e-payments and e-receipts.



Enterprises in India are eager to manage their suppliers effectively. They are investing in solutions which:



**Technologies Used:** Organisations have been using cloud, Artificial Intelligence and Machine Learning to automate their procurement function.



Companies are using other technologies like Bio symmetric, crowdsourcing, telematics and precision planning software. Some SAP procurement customers have implemented AI and automation. Supply chain automation, in their opinion will reduce the chances of errors and will improve the overall quality of products and services. More than 60% of companies have installed software to address unauthorised spend and overcharges and duplicate payments. **Future Software Implementation:** Companies are looking to implement cloud and AI/machine learning based applications in the next one year



**Barriers in Implementation of Digital Transformation:** Low adoption of new processes and technologies is one of the main barriers to adopt

digital transformation.



**Key Benefits of Digital Transformation of Procurement realized by organizations:**

- Operational efficiency and Supplier Collaboration
- Standardization and lower costs in Small and Medium enterprises



**Improvement by small and medium companies and SAP procurement customers**





## Global Supply Chain Trends in Post Pandemic Era 25-26 February, 2022

### Report on Spectrum 2022, Chennai Branch

The programme started with an inaugural function on 25<sup>th</sup> February at 09.30. It had participation of Mr.H.K.Sharma IIMM National President, National Secretary and Treasurer Mr.SurendaraDeodhar, VP-South Mr.N.Swayambhu Branch Chairman Dr. B.Ramesh, Spectrum 2022 Chairman Mr. K.Nagappan, Content Committee Chairman Mr. S. Subramanian (Subbu), Mr. TAB Barathi, Spectrum Advisor and Director Education, Mr. N.S.Sivaraman Spectrum Advisor alongwith more than 90 participants.



**Inauguration of Spectrum 2022 by Lamp lighting**



**Dr. B Ramesh, Chairman, IIMM Chennai**



**Mr. K Nagappan Spectrum 2022 Chairman**

The master of ceremony (Moc) Mr.N.S.Sivaraman, advisor to the Spectrum 2022 event, welcomed all the guests and the event started with formal lighting of the lamp by the dignitaries for the inaugural function. Branch Chairman, Dr. B.Ramesh gave the welcome address for the Spectrum 2022.

Mr Nagappan thanked for the efforts taken by the team of people in putting together this event. He said that signs are clear that the pandemic appears to be taking a back seat and expectation is that normalcy may get restored soon.

The address by National President Mr.H.K.Sharma, covered how newer technologies are impacting supply chain such as block chain, artificial intelligence etc.

He announced the development of a single digital platform for all IIMM activities.



**Release of Spectrum 2022 Souvenir**

The inaugural address by the Chief Guest Mr.C.K.Ranganathan -CMD Cavin Kare Pvt Ltd had ensured a path breaking start. He visioned the new rules of game, to succeed in business. The technology must be at the heart. Mr H K Sharma officially released the souvenir by giving the first copy to Branch Chairman.

Mr.Saurabh Jain Partner PWC rendered the keynote address on "Policy interventions by GOI in SCM for improving economic growth" as part of Technical Session 1.

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Mr.T.Sornakumar, Branch Secretary ended the inaugural session with vote of thanks.

Dr. Arun ChanderYadav Consultant and HOD Dept of clinical pharmacology in Apollo main Hospitals, addressed the T2 session and was chaired by Mr.J.Ravishankar-National Council Member and GM-Purchase Wheels India Ltd. This session provided insight on Logistics of the world's largest Covid-19 vaccination drive in India.

Technical session 3-Enduring the supply chain lessons from the pandemic across the industries was chaired by Mr.N. Swayambhu, VP South IIMM Chennai. Mr.S.Arul MD Kobelco Industrial Machinery Pvt Ltd and formerly with L&T Group and IIMM alumnus addressed the session. Mr Arul has taken a lot of initiatives in conducting training programmes to empower youth.

Technical session T4 kickstarted with Mr.K.Nagappan Spectrum event Chairman introducing the topic- "Building resilient healthcare supply chain post pandemic" that was rendered by S.Rajarajan, COO MGM Healthcare Chennai. He detailed his experience, based on his three-year-old hospital in the market i.e., MGM health care.

Tech. Session -5 Success story - How Milk Products maintained uninterrupted supply chain during pandemic - This session was chaired by Branch Secretary Dr. B.Sampath, who is the President of turnkey projects in WS Industries Chennai. Ms Kavya AGM Marketing Corporate office of Aavin representing Tamil Nadu Cooperative Milk producers Federation Ltd rendered the technical session.

She elaborated how supply of milk products were maintained uninterrupted with focus on supply chain during pandemic.

Before closing Mr T.A.B. Barathi Director Education presented a picture of educational activities of IIMM.

The first day's event closed with Mr.Subbu providing a summary of learnings of the day. It was highlighted that the sponsors of Spectrum 2022 has NTC group as Platinum sponsors and Barani Hydraulics as Gold sponsor. The event also had a large band of bronze sponsors from Raj petro, BRJ wooden packers, Venlub, KAPIL, PICKFAB, ITC, VANGARD logistics, SMPP, JKIG, SD Packers, Alchemy Global, JAY Engineering, KR industries, RAPL, Kyros, ONWO. The media partner is MOTOR INDIA.

Day 2, started with Technical session T6 on "Sensing wants, needs and preferences –The key to enhancing retail customers experience"- Mr.Surendra Deodhar-VP Materials Management of Reliance Group and National Treasurer IIMM HQ Mumbai delivered the first session of the day. Mr. Subir Kumar Mohanty, Branch Vice Chairman and GM Projects Alliance Grand chaired the session.

Technical Session 7- Significance of Telemedicine during and beyond pandemic - The session Chairman Mr.T.A.B.Barathi introduced the speaker Dr K.Ganapathy- specialist in Telemedicine Former President Neurological Society.

He quoted that the epicenter of healthcare is the patient. Now health care is treated as an industry. There is a huge team behind, every hospital. In future, everything will move out of hospitals, as retail becomes stronger.

T 8- Session dwelt on the Key role of automation in Future –Proofing supply chains, rendered by Mrs. Suchitra Anand of Microsoft, Azure Capacity Supply Chain and provisioning. This session was chaired by Mr. Subramanian Content committee chairman. The session focused on Azure capacity supply chain provisioning of Microsoft. Digitization using technology in Proctor and Gamble was illustrated.

In the post lunch, T9- Supply chain elasticity in the era of climate change – was handled by Mr. Sriram Google Hyderabad and the Session Chairman was Mr. P.Y.Venkateswaran, Past Chairman Chennai Branch.

The last session T10 was scheduled as a panel discussion, and was moderated by Prof.L.S.Ganesh former Prof. IITM. Sustaining a culture of quality with a hybrid workforce was the topic discussed.

Panel consisted of, Manufacturing sector - represented by Mr.Lakshmi Narasimhan GM-Brakes India Ltd., Logistics Sector - represented by Mr.J.Krishnan –Natesa and Co. and Ms Vidya Murali-Director-Kubos Consulting provided consultants' viewpoints.

The programme curtains were brought down by thanking the participants by Dr.B.Sampath.

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# THE FOUR TECHNOLOGIES SHAPING NEXT-GEN SUPPLY CHAINS

**DANNY SHIELDS, VICE PRESIDENT, AVETTA, CLOUD-BASED SUPPLY CHAIN  
RISK MANAGEMENT TECHNOLOGY AND SCB CONTRIBUTOR**

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Uncertainty is the only certainty there is,” mathematician John Allen Paulos once wrote. The procurement and supply chain management industries are no exception, but next-generation technology provides trends worth watching.

With time, the supply chain has shifted from the back-office function it once was to a strategic driver of business growth. Contemporary business models, technological advancements and innovative processes have made supply chains efficient and agile.

Supply chains will become more complex and internationally dispersed. Procurement leaders need to build on newer capabilities to help them navigate the changing business landscape and adapt quickly.

At this rate, what will supply chains look like in the year 2030? Big data, cloud computing, artificial intelligence (AI), robotic process automation (RPA) and the internet of things (IoT) will help procurement leaders, contractors and supply chain managers meet future demand.

While big data in logistics is still in its infancy, it’s the foundation on which AI, cloud computing and RPA become more accurate and effective in simplifying tasks and relegating them to automated systems. Big data expands the dataset for analysis beyond the traditional internal data in supply chain management systems and software. It also applies statistical processes to new and existing data sources. Now, most companies lack the tools and knowledge to explore and utilize big data in their supply chains. In the future, these tools will be more accessible.

**Cloud Computing and AI :** Supply chains generate big data, and cloud-based AI turns that data into insights. Cloud computing coupled with AI has transformed how supply chains operate, and its abilities will only increase in complexity over the next 10 years. Through predictive analytics, cloud and AI systems can use past trends and market indicators to facilitate the following processes:

- powering process automation
- informing supplier selection
- improving customer support
- streamlining supplier onboarding and automating

supplier management

- providing real-time information on shipments
- analyzing carrier performance
- anticipating trends in operational issues

Progressive companies already utilize supply chain knowledge management systems to respond to supply chain difficulties in real-time. With a cloud-based, mobile-enabled solution, supervisors input information from the worksite, immediately notifying operators.

Companies can build transparent supplier relationships by automating the information exchange between an organization and its suppliers and contractors. Organizations can easily manage their vendors down to each individual worker across geographically dispersed worksites. Workers can complete site-specific orientation and training online before they set foot on site. Operators can track the completion status of the training curriculum and assess knowledge retention through online evaluations.

Analytics can help companies monitor supplier/vendor capabilities and track data on a supplier’s compliance or performance. Traditionally, different departments compiled this information through paper records. Decision-makers had to sift through piles of papers or electronic files to find this information. Today, advanced analytics allows operators to define supplier attributes to categorize them into logical profile sections. Detailed supplier profiles make it easier for operators to quickly retrieve, process and validate supplier information in a matter of seconds.

Once a new supplier is onboarded, collecting, verifying and storing supplier data will ensure responsible supplier risk management. A high-end analytics engine can analyze this data to generate supplier performance insights in real-time. Such insights empower sourcing professionals to easily monitor the supplier and vendor pool, their credentials such as certificates of insurance (COIs) and their compliance status.

Delivering tangible cost savings has always been a critical task for procurement and will continue to be a high priority in the next decade. Considering this, procurement leaders will have to look for newer ways to achieve cost efficiency. One way is through supplier



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analysis. Critical supplier information is often trapped in varying data management systems. Consolidating that data into one common repository helps operators get better visibility into spending across the entire value chain. A centralized data framework, complemented by an analytics engine, for example, can help decision-makers identify expensive or low-performing suppliers. A new central data management system can be seamlessly integrated with the legacy system through application programming interfaces (APIs).

**Robotic Process Automation :** Robots are expected to see “strong growth over the next five years, particularly within supply chain operations that include lower-value, potentially dangerous or high-risk tasks,” according to Deloitte. With the massive growth in e-commerce, this should not surprise anyone in the logistics world. Robotic technology applications include automated vehicles like drones, trucks and trains, last-mile deliveries and storage and retrieval systems (ASRS).

The increased usage of autonomous robots can achieve the following objectives:

- increase efficiency and productivity
- reduce re-work and risk rates
- improve employee safety
- perform mundane tasks so humans can work more strategic efforts
- increase revenue by improving order fulfillment and delivery speed, leaving customers satisfied

New pricing structures will enable companies to invest in automation, making the leap into robotics much more feasible. Using a RaaS-type model (Robotics as a Service), providers lease units through a monthly service contract instead of customers paying an up-front capital expenditure.

**Internet of Things :** An emerging trend for supply chain managers is asset tracking through IoT to save time and money and enable data-driven decision-making.

The IoT is made up of interconnected physical devices that can monitor, collect and send data to cloud-based software for analysis via Wi-Fi. IoT devices have improved quality management in supply chains through GPS tracking of shipments and monitoring parcel conditions. RFID chips, smart devices and mobile sensors can track and authenticate products, measure temperature, humidity, light levels, movement, handling, speed and other environmental factors of shipments.

The growing pace of technological innovation propels digital supply chain management solutions. Thankfully, embarking on the technical journey will become more accessible and cost-effective as more technologies emerge. Organizations that rapidly adopt these

emerging solutions while incrementally replacing legacy systems will better navigate this decade with greater insight and efficiency.

Danny Shields is vice president of industry relations at Avetta, a provider of cloud-based supply chain risk management technology.

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



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# A RESILIENCE METHODOLOGY: HOW SUPPLY CHAINS BECOME MORE RESILIENT

SAMPAD RATH

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## A Resilience Methodology: How Supply Chains become more Resilient

Many corporations are struggling to keep themselves ticking over due to the immense effect of the coronavirus pandemic on global supply chains. Since they themselves are dealing with workforce shortages, cash deficits, or blocked warehouses, many manufacturers are no longer reliable. Adding to this are the problems that impact many similar service providers, such as logistics. Therefore, the risk of supply chain breaks has risen significantly. So how can they be avoided?

### Supply chains need to be more flexible, stable and stronger

The development just described also revealed the high susceptibility to breakdowns of complex supply chains. Although individual industries such as the food industry, manufacturers of farm and harvest machinery, or hardware stores have come through the crisis reasonably well so far, supply chains need to be built in the future to be more durable and resilient. To this end, at least part of the supply chains must be restored in order to work stably in the crisis situation and to be ready for a new normal after the pandemic. Experience has shown after all that supply chains face the greatest obstacles when after an extraordinary situation, market volume picks up again.

In general, understanding the changed behavior of consumers, avoiding single-sourcing strategies, and

shortening and stabilizing supply chains by concentrating heavily on local, regional, or country specific suppliers is critical. Benchmarks that are decisive are:

- The number of vendors,
- A blend of manufacturers,
- The strategic value of such materials or items.

In addition, metrics are also essential, such as time-to-recover i.e. the period from the supplier's failure to replace it or time-to-survive, i.e. the quantity of materials kept in stock to keep production going.

### Strong measures to improve resilience in the supply chain

For the required changes, a methodical procedure with these four main aspects is appropriate:

#### 1. Risk Analysis

After the recession, many supply chains need to be reactivated quickly. You would have to analyze, though, to what extent, at least to some degree, they can be replaced by other, less dangerous alternatives. Overall in terms of quantity and countries of origin, this relates to determining the supplier mix. In addition, attention should be given to the relationship between warehousing and just-in-time delivery.

However, the desired higher degree of supply chain protection and stability would have to be balanced against higher costs in certain cases. Therefore, it is more important to disperse existing stocks sensibly rather than building up new defense stocks in order to prevent increased capital commitment in economically crucial times. In addition, the use of smart forecasting and optimization systems for inventory management should be considered by businesses to align distribution capacities and stock levels.

#### 2. Emergency Case Plans

The German government submitted a risk assessment for an emergency scenario triggered by the SARS pandemic as early as 2013. Similar notions may have

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been established by other countries. Nevertheless, the supply chains of most businesses here and there were not prepared for such a situation. Therefore, contingency strategies for coping with the economic crisis or other emergencies should now be established at the latest, so that supply chains can be stable and resilient. In particular, the goal is to identify possible options for reaction and to define alternatives for sourcing.

### 3 Sourcing Strategies

The concrete design of a supply chain needs to be assessed on the basis of the aforementioned risk analysis and the derived emergency plans. Diversification of the supplier base, avoidance of geographical dependencies, management of inventories and distribution of stocks, and even potential improvements to the company's own depth of value development are the most important points here.

### 4. Co-operation

The current crisis has shown that soft factors are also essential and helpful, such as mutual support. The sharing of materials and personnel, the awareness of interdependence, greater accountability, and the disclosure and transfer of data outside the walls of the business ensure greater consistency in the supply chains that benefit everyone.

### 5. Diversify base of Suppliers

A simple way of addressing heavy reliance on a single medium- or high-risk source (single plant, supplier, or region) is by incorporating additional sources at locations that are not vulnerable to the same risks. Some companies have been inspired by the U.S.-China trade war to move to a **"China plus one"** strategy to spread production between China and a country like Vietnam, Indonesia, or Thailand in Southeast Asia. But regional issues such as the Asian financial crisis of 1997 or the tsunami of 2004 call for wider geographical diversification.

A regional strategy to manufacture a significant proportion of key products within the area where they are consumed should be considered by managers. By moving labor-intensive jobs from China to Mexico and Central America, North America could be served. Companies could increase their dependency on eastern EU countries, Turkey, and Ukraine in order to supply Western Europe with products used there. Chinese companies that want to secure their global market share are already looking for low-tech, labor-intensive development in Egypt, Ethiopia, Kenya, Myanmar, and Sri Lanka.

Different logistics strategies would also be required to move production from China to Southeast Asian countries. Unlike China, these areas also do not have effective high-capacity ports capable of handling major markets with the largest container vessels or direct marine liner services. This would mean greater transshipment to markets via Singapore, Hong Kong, or other hubs and longer transit times.

### 6. Keep an Intermediate stock or Safety Inventory

If alternative suppliers are not immediately available, a company can decide in the meantime, in what type, and where along the supply chain, how much extra stock to carry. Of course, security inventory, like any inventory, brings the risk of obsolescence with it and ties up cash as well. It runs counter to just-in-time replenishment and lean inventories, the common method. The benefits from such activities, however, have to be balanced against all the costs of the interruption, including the loss of sales, the higher prices that will have to be charged for goods which are unexpectedly in short supply, and the time and effort needed to secure them.

### 7. Take advantage of Innovation in Method

Some might ask their suppliers to travel with them as businesses relocate parts of their supply chain, or they might bring some production back in-house. Any path is a chance to make substantial process changes, such as transplanting a production line or setting up a new one. This is because you can unfreeze the operational habits as part of the adjustment and review the design assumptions underpinning the initial phase (For businesses with current production lines, one problem is that when those assets are completely depreciated, managers may be inclined to maintain them rather than invest in new, more efficient plants and equipment: because the expense of depreciation is no longer taken into account in the measured cost of production, the marginal cost of raising production in idle-capacity plants is lower).

We can also develop new strategies for resilience management in supply networks beyond supply chain optimization. Cooperation platforms are one example, enabling businesses, for example, to serve as virtual central warehouses and exchange product information. In this way, collaboration can be coordinated and made operationally useful by technical support on an overall basis.

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





# SUPPLY CHAIN RESILIENCE: HOW ARE PANDEMIC-RELATED DISRUPTIONS RESHAPING MANAGERIAL THINKING?

- The impact of the pandemic on supply chains has been global, prolonged, and comprised a series of major shocks to companies' logistical systems.
- While the pandemic has accelerated the automation of logistics activities, reducing their exposure to future epidemiological risks, some of the biggest lessons for the future centre on new managerial thinking.

**T**he COVID-19 pandemic has tested the effectiveness of 20 years of research, debate and planning on supply chain resilience.

Business continuity plans that companies thought were robust have proved seriously deficient. As a defence, it must be acknowledged that a global pandemic is an extreme example of a 'HILP', a high-impact low-probability event, that is understandably beyond the reach of many companies' risk radar and resilience planning.

Most supply chain disruptions, after all, have limited geographical extent and conform to the standard single-trough, limited-duration profile outlined by Sheffi and Rice back in 2005. In sharp contrast, the impact of the pandemic on supply chains has been global, prolonged, and comprised a series of major shocks to companies' logistical systems.

Few of the early commentators on COVID-19 disruptions anticipated the magnitude of the latest shock, which has seen eight-fold increases in average container shipping rates, global transit times lengthen by 25% or more and widespread product shortages at every level in the value chain.

How is the experience of these pandemic-related disruptions reshaping managerial thinking on supply chain resilience? This is something that we explored with a group of 60 supply chain leaders as part of the New Generation Industry Leaders community, in a session convened by the World Economic Forum.

Most of them were on the front-line, dealing with the sequence of supply chain challenges that began in early 2020 and are continuing today. In group discussions they explained what they felt could have been done differently, what longer term lessons had been learned and what new skills managers will need to be better prepared for the next disruption of this magnitude.

## Supply chains: The benefit of hindsight

There was a consensus that some things could have been done better given the circumstances at the time.

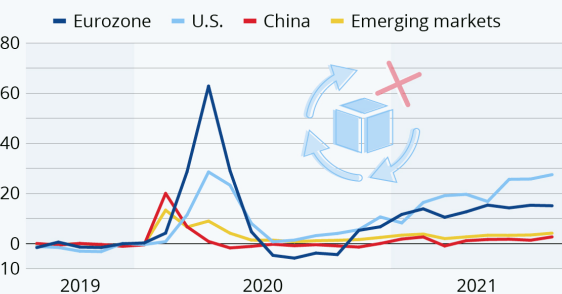
A common admission was that response times had been too long. Companies based in the West had advanced warning of what to expect both in terms of the direct industrial impact of COVID-19 and the global flow of product from the regions initially affected.

Some could have used this time more effectively to adapt contingency plans and prepare systems for the imminent transition from business-as-usual to crisis management. For example, this could have involved getting IT systems and workforces ready for remote working. The pandemic was seen as a test of the agility with which firms managed their supply chains, a test in which some of them performed poorly.

Internal and external communications could have been improved. The pandemic exacerbated the silo structure that still prevails in many businesses, inhibiting the flow of information and obstructing a co-ordinated response to supply chain disruptions. Experience has now shown that managing supply chains during a pandemic requires a cross-functional effort. It also needs more open and regular communication with supply chain partners.

## Supply Chain Disruptions Make a Comeback

Index of global supply chain disruptions (100=most disrupted)



Based on the difference between the supply delivery times subindex and the supply delivery times based on manufacturing output subindex (both part of the PMI)  
Source: IMF



statista

## Supply chain disruptions make a comeback

Some managers felt that suppliers, customers and logistics providers could have been kept better informed of their own companies' situation and forward planning. Multinational businesses, particularly those with operations in the Far East, could

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have exchanged more information about COVID-19 impacts and best practices for dealing with them.

Another issue, seldom mentioned in the supply chain resilience literature but highlighted in our discussions, was the mental well-being of managers and employees. This is often taken for granted but in a pandemic takes on a special significance when people worry about their health, normal working relationships break down and lockdowns cause social isolation. One manager referred to the greater need for 'emotional resilience' in the way that supply chains are managed.

### **Lessons for the future for supply chain resilience**

According to the literature, the standard methods of reducing the vulnerability of supply chains and increasing their resilience are more localized sourcing, diversification of the supply base and increased inventory at critical locations.

Curiously, there was little explicit mention of these initiatives, though they would no doubt feature in the general recalibration of contingency planning and new business models that some managers recommended. Also included under these headings were rationalizing product ranges, reducing process complexity and relying more heavily on circular supply chains which tend to be more localized and dependable.

Many of the longer-term lessons will relate to the logistics workforce. The pandemic will accelerate the automation of logistics activities, reducing their exposure to future epidemiological risks. Logistics buildings and equipment will also have to become more pandemic-compliant to ensure greater social distancing and sanitizing.

The switch from on-site to remote working should be much quicker in the next pandemic, partly because hybrid working is now widespread and the balance between office and home working easily tilted at short notice. These changes should take full account of the welfare of workers both physically and psychologically. To give this high-level oversight, several managers stressed the need for their businesses to appoint a Chief Medical Officer (CMO).

The pandemic is also likely to accelerate the uptake of new technologies such as augmented reality in warehousing operations and 3D printing. The latter has found many new applications over the past two years increasing its influence on supply chains, particularly in the medical equipment sector.

Managers argued that their companies required 'deeper knowledge' of their upstream supply chains to assess their vulnerability to future global threats. Visibility of tier-one and tier-two suppliers was no longer enough given the complexity and geographical extent of modern value chains.

According to the Business Continuity Institute, 40% of Covid-related disruptions occurred at tier 2 or above in companies' supply chains, levels often beyond the reach of their due diligence assessments. This made it difficult to determine the COVID-19 exposure and

related credit-worthiness of upper-tier suppliers. Some managers argued that visibility alone was not enough. They saw the pandemic possibly heralding a new era of supply chain collaboration that would not only allow companies to manage risk more effectively but also yield wider sustainability benefits.

### **Upskilling the supply chain workforce**

To effect all these post-pandemic changes, managers felt that they would need to expand their skill sets in several ways.

First, they would need to 'think out of the box' to minimize the risk of their companies being ill-prepared for another event with such devastating supply chain consequences. Ideation and scenario-building skills would help them to anticipate the wider ramification of supply chain disruptions such as those caused by COVID-19. The ability to model changing risk profiles during the course of a crisis would also be an asset, particularly where, as with a pandemic, it can last for many months or years.

Second, many of the delegates had found it difficult to manage virtual teams during the pandemic and would welcome training in how to do this effectively, drawing on the wide experience that has been gained over the past two years. As hybrid working is now the norm for many people in supply chain and logistics roles, the capability to manage virtual and mixed teams is becoming a core competence. In many cases this will involve increasing managers' digital literacy with online networking tools. So there are both leadership and technical dimensions to their upskilling for the post-pandemic work environment.

At a more fundamental level, the pandemic has demonstrated the need for supply chain managers to factor risk management and resilience into all aspects and levels of their decision-making. This may prove to be its legacy to the supply chain management profession, preparing it not just for future health crises but for a broad range of other high-impact low-probability events.

### **Written by**

Alan McKinnon, Professor of Logistics, Kühne Logistics University

Tanja Kueppers, COO DHL Supply Chain Europe, Middle East and Africa, Deutsche Post DHL

Maria Basso, Platform Curator, Shaping the Future of Advanced Manufacturing and Value Chains, World Economic Forum

Marina Colombo, Industry Lead - Energy, Materials Infrastructure Platform, World Economic Forum

The views expressed in this article are those of the author alone and not the World Economic Forum.

Source: World Economic Forum

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# WORK-LIFE BALANCE AND DIGITALIZATION

MADHURI GOVILKAR

**W**hat is your everyday life like, while going to work? Do you think you take enough time out for yourself? I'm sure most of you stay busy attending phone calls from work on weekends when you should be able to spend some quality time at home! In order to have a perfectly healthy work environment, it is essential for every individual to maintain a perfect balance between their personal life and their work. Imagine, leading a stress-free life where every aspect of your well-being is not at stake and you're getting to spend quality time with your friends and family once you're back from work. Wouldn't it be a perfect life?

In today's always-on digital world, the workday often blurs and blends itself into our personal lives. Finding the right balance isn't just nice to have, but is crucial for good health. A perfect work-life balance isn't just about finding a great job and having a successful career, but also about integrating wellness into one's daily routine. Even a great job can be dangerous if not managed properly. Technology has been proclaimed as the solution to solve all of our work issues.

Brilliant performances in business and the workplace require proper planning and utilization of one's strengths along with a healthy lifestyle that does not entirely revolve around the workplace. Every individual must have a clear goal, alongside a balanced skill-set that will enable them to play to their strengths. One needs to focus on what they are good at to be an efficient team leader. These may include any activity inside or even outside the workplace, like perhaps, playing golf, or skydiving! It is essential to be self-aware if one wants to be impactful and strong while leading an organization, and this requires peace-of-mind and a proper work-life balance. Every leader must understand and acknowledge their area of expertise, along with their blind spots both at home and at work. To be more successful, a visionary needs to work on their vulnerable aspects and further develop themselves through maintaining a healthy work-life balance.

Confidence in oneself allows an individual to embrace the stress and hardship required for growth. Sometimes, our desire to succeed in our professional lives may lead us to ignore our emotional well-being. An individual needs to equally prioritize the demands

of both aspects of their lives in order to thrive in both spheres.

Good balance impacts an individual's well-being and helps lower stress. Employers must look to shift their work structure towards a more 'work-life balanced' friendly model, which can not only be realistic, and practical but also ideal and is driven by a technological underpinning. The old adage 'health is wealth,' holds even more relevance in today's business world. Each individual must prioritize their physical, mental, and emotional health while balancing their careers. Failure to do so can lead to diminished effort in one's career. Each person must be allowed enough time from their professional lives to recuperate from weekly stress and long hours of work. Employers must encourage their employees to have a separation between their work life and home, where they can completely switch off from work and come back with renewed energy and enthusiasm.

A healthy balance between work and family time will also ensure increased productivity while improving organizational reverence and loyalty. Ample Rejuvenation can also serve to motivate an individual towards delivering more outstanding results at work. While working is vital, it also is kept in mind that one should spend a sufficient amount of time with their loved ones.

One must keep a different amount of time chalked out and blocked for essential activities and work-oriented tasks. Their focus must be effectively divided into their personal and professional lives because a proper equilibrium between every aspect of one's life is equally important.

A perfect balance between work and personal life is important for the business to thrive because if either of the two is in shambles, it directly affects the other one. While talking about the procurement process and why it requires a digital transformation, we can say that it is required not only for agility in the procurement process as a whole but also to make work-life easier for employees and leaders.

There are several organizations that rely on paper-based processes and manuals instead of digital solutions. This is typically a result of inefficiencies in the procurement management processes that leads to unnecessary hassle. Paper-based or manual transactions lead to a massive amount of paperwork, resulting in unaddressed errors and spend leakage which can be tedious for employees in these organizations. The evolution and transformation towards digitization and automation in all things procurement has led to long-term business success. Over the past ten years, the impact of digital technologies on markets, customers, business models, and industries has been massive. The technological revolution has also massively impacted the internal structure of organizations where employees can work faster and far more efficiently and complete their work more flexibly, thus keeping the work environment both internally and externally, thriving. Thus, to essentially have excellent command over goods and services, adopting technological changes is the best possible solution, mainly because the competition between several organizations and businesses is on the rise and calls for innovation and progress into the future.

Procurement automation reduces processing time and cost and improves compliance, and enables a better overall supply chain management of the procurement process. An efficient procurement process reflects positively on the entire organization. People must move beyond traditional processes and optimize the whole process to produce significant value in business because this is directly related to having a perfect work-life balance.

A smooth and hassle-free work environment enables peace of mind, both at home and at work. Technology is capable of creating wonders. It is quite challenging to juggle between executing and planning projects alongside multiple vendors and negotiating the best deals. A procurement professional has to manage everything. The best way of doing it is by adopting technological innovations and processes efficiently. In fact, each and every person must adopt technological solutions to guide several aspects of their lives because it would make things far more agile, efficient, and easier.

Thus, to conclude, it is said that a digital procurement process not only reduces costs but also brings about a more efficient way of doing specific repeatable tasks, which helps in taking an unnecessary load off an individual, thus enabling them to worry less and thrive more.

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



## CONDOLENCE MESSAGE OF A.K. SRIVASTAVA



## OBITUARY

IIMM expresses profound grief at the sad demise of Mr. A.K. Srivastava, a Distinguished Member of IIMM and Past Chairman-IIMM Kolkata Branch for 1996-97, who passed away on 25<sup>th</sup> February 2022. He was one of the pioneer leaders of IIMM, Kolkata Branch. His involvement in various activities at Kolkata Branch and at National level of IIMM for several years immensely influenced and helped the growth and development of IIMM and Materials Management Profession as a whole. His simplicity, modesty and professional acumen made him an unparalleled personality.

The IIMM family condoles his death and expresses profound sympathy to the bereaved family. May the departed soul rest in peace.

OM Shanti!



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## MULTI-LEVEL WAREHOUSING – THE NEW SOLUTION OF STORAGE

**SAMPAD RATH,  
PRIYESH MISHRA**

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

Prior, the motivating forces to enter India's warehousing segment was insignificant for composed players, as the occupiers themselves were substance to draw in with periphery accomplices offering minimal effort choices with a system of little storerooms close to factory setup. Various state and local level assessments made it reasonable for organizations to keep up a little warehouse in each state. Further, this restricted the attention to computerization and higher throughput. This demeanour of occupiers of wanting to save money on costs as their sole goal is evolving. There has been steady progress in the mentality of occupiers to utilize the administrations offered by sorted out portions. Plenty of variables is driving this rush of progress, for example, a prerequisite from consistence controllers (in the event of the pharma business), quality consistency affirmation required by customers/controllers, legal punishments on rebellious warehousing offices, economies of scale being accomplished through bigger distribution centres, wellbeing and security of products, productivity in

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

### **MULTI-LEVEL WAREHOUSING: THE NEW SOLUTION**

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

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

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and large operational and inhabitation costs.

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

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

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

Food and drink, synthetic compounds,

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

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

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

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

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

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

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

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



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# BLOCKCHAIN DRIVES TRANSPARENCY IN THE SUPPLY CHAIN

*Adopters face marketing, data and governance challenges before they can reap the technology's full benefits.*

JEN A. MILLER

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**W**hile blockchain is often talked about in relation to cryptocurrency (and grabs headlines for it), it's already being used in supply chains to create greater visibility and transparency.

"If you think of supply chain today, and the volume of paper and faxes and email and data exchanges and phone calls that actually support the process, it seems pretty obvious that if you could get enough people to streamline those things using a common system and a common application, you could get a whole lot of value out of that process," said Scott Buchholz, emerging technology research managing director at Deloitte.

In "Innovation Driven Resilience," the 2021 MHI Annual Industry Report, MHI and Deloitte surveyed more than 1,000 supply chain professionals worldwide about innovation investments in the supply chain. They found that 10% of companies surveyed plan to invest in blockchain and distributed ledger technologies in the next three years. They also found that 12% have blockchain in use today, and 41% predict it will be in use within the next five years.

While the usefulness is already being seen in areas like grocery and luxury goods, blockchain — and that level of true transparency — is not an easy sell. As the technology grows, though, it may change the definition of visibility in supply chains altogether.

## **Blockchain boosts traceability**

Blockchain gained footing in grocery, where knowing the source of a product can be a matter of life or death. The technology is allowing retailers to quickly pinpoint the source of outbreaks of pathogens like E. coli.

Walmart, which uses IBM's blockchain platform, says it can trace the source of mangos in one of their stores in 2.2 seconds. Before, they would need six days. Not only does blockchain help a retailer know quickly where the outbreak started, but it also means that they know which food items need to be destroyed, and what can stay on the shelves.

While that's important for consumer safety, if grocers allow consumers to access blockchain via a QR code, it can also give grocery stores a marketing leg up.

"You see coffee beans on the shelf and via a QR code you can see these coffee beans came from this location during this kind of activity. It gives you a story line," said David Furlonger, vice president and Gartner Fellow in Gartner's CEO and Digital Business Leaders research group.

Blockchain has also found footing in luxury items,

especially those where customers seek authenticity.

Hong Kong-based jeweler Chow Tai Fook sells diamonds certified by the Gemological Institute of America and that meet the requirements of the United Nations' Kimberly Process, which means they're ethically sourced. They use blockchain to digitize their diamonds' certifications. "That's how we protect our customers," Jade Tin Hei Lee, general manager of business analytics and technology applications at Chow Tai Fook Jewellery Group, told Deloitte for their "Tech Trends 2022" report. "With blockchain, they have full transparency into the journey and the quality of their diamond."

## **Who governs a decentralized system?**

For blockchain to work across the supply chain, everyone involved must add information about products to it, and make that information accessible to everyone else. "Not all organizations feel comfortable sharing data with others," said Arthur Carvalho, assistant professor of information systems and analytics at the Miami University Farmer School of Business.

Blockchain also faces the challenge of governance, he added, and must work through various basic questions. Who is going to own the blockchain system? Who will pay for it? And when the blockchain owner wants to make an upgrade, how does that work and how can that be coordinated across every single vendor in the supply chain?

A company like Walmart can implement blockchain — like it did for 2019 for suppliers of fresh leafy greens — because of their dominance in the market. A vendor could say no, but then they could lose Walmart as a customer. "Walmart has so much power and leverage and influence that they can go down to farmers and packers and say please adopt my system," said Carvalho, and also provide software and subsidies to adopt it.

Successful use cases can build confidence in the technology, and lead to its adoption in other areas, said Buchholz.

"There will be waves of adoption that start with things like high value jewelry or high spoilage items like food, and work their way down as costs come down and standards get adopted, he said. "If you look at the history of adoption, it starts somewhere and grows from there."

Source: Supply Chain Dive

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# SUPPLY CHAIN TECHNOLOGY TRENDS THAT WILL IMPACT BUSINESSES IN 2022

*Cloud technology has completely transformed all the levels of supply chains from planning and sourcing to logistics and distribution.*

**ANJANI MANDAL, CEO, TRUCKNET DIGITAL**

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If there was one good thing that came out of the pandemic is that it has accelerated the digitization of their customer and **supply chain** interactions and of their internal operations by 3-4 years. At both organizational and industry levels, technology adoption has taken a quantum leap. The **logistics** sector is undergoing a transformation and consolidation, organizing the highly fragmented industry. Organizations are preparing themselves better for upcoming disruptions with new and efficient protocols at the plants. Resilience and agility are the need of the hour and companies are adopting digital technologies to remain competitive in the face of disruptions. Late deliveries, lack of visibility and control, and manual errors have pushed organizations for technology adoption like never before.

## **Collaborative Execution – Preparing Today's Supply Chains**

Ever since the COVID pandemic hit the country, businesses have been facing unpredictable out-of-stock situations, stranded trucks, and a lack of visibility into their supply chains. The modern supply chain poses a host of new challenges for leaders to grapple with - increasing costs, a slew of disruptions, and the complexities posed by new distribution and sales channels add to the complexity of managing operations efficiently. There is an urgent need for improved demand and distribution visibility, integrating new channels, and improving control over quality and speed of delivery in both the first and last miles of the supply chain.

The next stage of productivity improvement is expected to be delivered by the deployment of technologies to facilitate collaborative execution by integrating processes across the shipper and vendor organization to provide end-to-end visibility and get better control through the transaction execution. With a tech-enabled supply chain, organizations can better allocate critical resources and organizations have protocols and

SoPs for their manufacturing facilities as well as field and office staff to continue operations to steer through the disruptions.

**Digital Transportation Management Systems :** Digital Transportation Management Systems enable businesses to be proactive in bringing operations under control. The core of the approach is the optimization and collaborative execution framework, which is executed as a cloud-based platform with allied services to provide the full solution. A TMS helps to deliver a critical competitive advantage through complete visibility and control over their transport operations. The results are to meet the new expectation of the digital future - improved responsiveness to changing customer demands and resilience in the face of disruptions.

**Cloud Technology and Mobile Computing :** Cloud technology has completely transformed all the levels of supply chains from planning and sourcing to logistics and distribution. Traditional supply chain management systems are very transactional compared to cloud systems which in turn can drive unparalleled visibility and control and make supply chains flexible and resilient. Cloud-based organizations have not only benefited from increased cost savings but have also attained never before agility.

The last-mile and warehousing section has gained substantial importance due to the rapid growth of e-commerce and a strong move toward direct-to-consumer. Even the large consumer companies have started joining the e-commerce wave with their own direct-to-consumer initiatives. The key technology trends for this segment include digitizing the warehousing and last-mile logistics. AI-driven automation, direct-to-consumer initiatives, and acceleration towards sustainability are also bringing into focus complex technology solutions.

Source: <https://www.indianretailer.com/>





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## WAREHOUSING DEVELOPERS LOOK TO RAMP UP EXPANSION IN TIER-II AND METROS

KARVI RANA

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**T**he spectacular growth exhibited by the retail, ecommerce, grocery firms and third-party logistics providers have spurred up the demand for last mile deliveries, forcing top warehousing developers to ramp up their expansions in the tier-II locations and within metros.

Aiming to have a better reach to the consumer, operators and investors such as ESR, LOGOS, Blackstone-led Horizon Industrial Parks, and Welspun One Logistics Parks (WOLP) are actively eyeing land acquisitions in smaller cities and vying for first mover advantage in setting up multilevel in-city logistics hubs.

With focus on tier-II cities, ESR is currently in advanced discussions to acquire 3-4 land parcels. The company kicked off its urban logistics plan with the acquisition of 8.2 acres of land in Alipur, Delhi, to establish a distribution centre spread

across 300,000 sq ft to cater to e-commerce, grocery, pharmacy, cloud kitchen, and other companies.

**“2021 was a mixed bag, with lot of leasing in e-commerce but slowdown in industrial. In the last six months light manufacturing and industrial sectors have revived. We are looking at significant expansion this year, including in tier-II markets, which have become important because of e-commerce penetration. Our strategy would be to build more plug-and-play (warehousing) facilities, which help customers to go live in three months,”**

Abhijit Malkani, chief executive officer (CEO), ESR India.

Warehousing has been a sweet spot for the real estate industry during the pandemic largely because of the e-commerce boom. According to JLL India, the cumulative warehousing supply in the top 8 cities was 287 million sq ft in 2021-end and is expected to touch 500 million sq ft by 2025.

Logistics Operator, LOGOS in 2021 signed 1.8 million sq ft new leases and delivered 2 million sq ft, leaving a few land acquisitions incomplete due to the challenges that came as a result of the covid-19 pandemic.

**“We want to expand in eight cities, but also beyond them and look at in-city logistics. The challenge in in-city logistics is fragmented real estate ownership and high values, but we are keen on exploring the space. There is demand and it will be led by e-commerce and quick commerce firms, but there may be a constraint in supply,”**

Mehul Shah, CEO, LOGOS India

LOGOS plans to build another 2 million sq ft by 2022-end and may acquire a ready portfolio of one or two million sq ft.

Blackstone has also set up a logistics vertical ‘Horizon Industrial Parks’ in India to house its existing assets, which will be scaled up through acquisitions and greenfield developments. The company in a time span of over 18-24 months, plans to double its portfolio in and around large cities and selectively in smaller cities.

**“We aim to buy land in Siliguri, Jaipur, Coimbatore, Bhubaneswar, and Guwahati. We are exploring in-city development but it will take more time to catch up. The future of shopping is hybrid, so there would be a lot of last mile delivery requirement but it’s a different product,”**

Anshul Singhal, managing director, WOLP

“We believe the packaging sector can be a major demand driver in 2022, while leasing by e-commerce firms may moderate because they have committed to a lot of space last year,” said Chandranath Dey, head of operations, business development, logistics and industrial, JLL India.

Source: Live Mint

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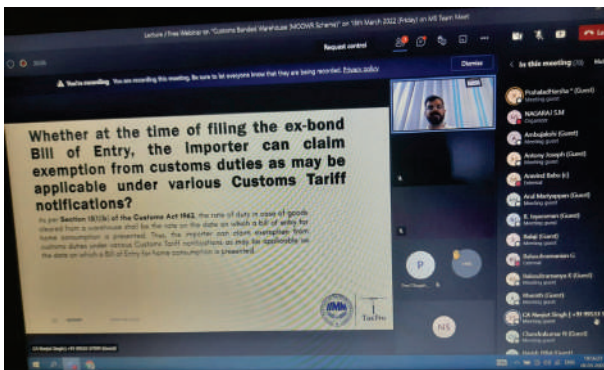
## BRANCH NEWS

### BANGALORE BRANCH

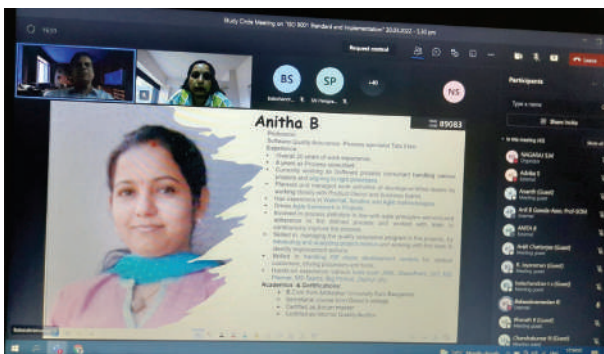
**28<sup>th</sup> February 2022: Industrial Meet:** An Industrial Meeting was organised by IIMM Bangalore Branch on 28<sup>th</sup> February 2022 with dignitaries of SLR Metalicks, Hospet, regarding Inhouse Training program on Legal and Commercial aspects of Purchasing.



*Mr. Balasubramanian Sr. Faculty giving presentation on 16th March 2022*



*Mr. CA. Navjot Singh, Managing Partner-Indirect Tax addressing gathering - Lecture Program on 18th March 2022*



*Ms. Anitha B, Quality Manager, Tata Elxsi Ltd addressing the gathering on 20.03.2022 - Study Circle Meeting*



*Presentation Program at Seshadri Puram College on 16.03.2022, Dr. Meera H.N. Principal, Dr. Bhargavi VR, Professor and Director, Mr. Balasubramanian, Sr. Faculty on the dais*

Dr. C. Subbakrishna, Past National President, Dr. P. Sengottaiyan, Branch Chairman, Mr. D. Murugesan, Sr. Faculty, Mr. G. Balasubramanian Sr. Faculty and Mr. S.M. Nagaraj, Senior Manager – Administration attended the meeting.

Dr C. Subbakrishna explained briefly on Legal & Commercial Aspects, Contract Management and Applicable Laws.

Mr. D. Murugesan also briefly explained on FTP(EXIM), Incoterms, FEMA, Payment Mechanisms, and International Guarantee.

Dr. P. Sengottaiyan, Branch Chairman talked about Procurement software utilization in the organization.

Mr. G. Balasubramanian moderated the meeting, and the meeting was very fruitful and well understood by the Company.

**16<sup>th</sup> March 2022 : Presentation Program :** IIMM Bangalore organized an Educational Meeting with the Management team of Seshadri Puram College and also organized a presentation about "Career Opportunities in SCM " for the benefit of students of M.com.at the College seminar Hall. There were about 40 students attended the session and was very interactive session.

Presentation was made by **Mr. G. Balasubramanian, Sr Faculty** of IIMM Bangalore Branch and Mr. S.M. Nagaraj, Senior Manager - Administration accompanied the Faculty.

After the presentation program, a detailed meeting was held with Dr. Meera H.N. Principal and Dr. Bhargavi V.R. Professor and Director of Seshadri Puram College, regarding, Membership, Monthly Lecture Program and Value addition courses on Supply Chain Management for the Candidates, those who are perusing Master Degree at the College.



Possibility of collaboration on a long term was explored.

**18<sup>th</sup> March 2022: Lecture Program / Free Webinar - Online :** IIMM Bangalore Branch had organized a Lecture Program / Free webinar for the month of March 2022 on “**Customs Bonded Warehouse (MOOWR Scheme)**” on 18<sup>th</sup> March 2022 (Friday) on MS Team Meet.

**Mr. CA. Navjot Singh, Managing Partner-Indirect Tax, International Trade, TaxTru Business Advisor spoke on the subject “Customs Bonded Warehouse (MOOWR Scheme)”.**

In his presentation he covered, well explained that, to promote India as the manufacturing hub globally and the commitment towards ease of doing business, MOOWR is an another initiative taken by CBIC , by allowing import of raw materials and capital goods without payment of duty for manufacturing and other operations in a bonded manufacturing facility. The regulation made by CBIC is named “Manufacture and Other Operations in Warehouses. Under these regulations, the import duty is deferred when the raw materials or capital goods are imported. These regulations shall apply to units that operate under Section 65 of the Customs Act, 1962, or to units applying for permission to operate under Section 65 of the Act. Program was well received and the Q&A session was very effective.

**20<sup>th</sup> March 2022 : Study Circle Meeting :** IIMM Bangalore Branch organized a Study Circle Meeting on “ISO 9001 Standard and Implementation” on 20<sup>th</sup> March 2022 on MS Team Meet. Mrs. Anitha B. Quality Manager, Tata Elxsi Ltd spoke on the subject. At the end the Speaker provided detailed clarifications on various queries of the participants.

The feedback received from the participants on the program was excellent. About 75 members, Students and Invitees -SCM/MM Professionals participated in the Study Circle Meeting and the key take-aways are very useful in their day-to-day work.

## CHANDIGARH BRANCH

Core group of IIMM Chandigarh branch under the Chairmanship of Mr Rajesh Gupta decided to improve visibility of IIMM in Industry. Under this initiative, Mr S. K SHARMA Former National President and National Councilor and Mr Arun Batra National Councilor and Immediate Past Chairman of the branch visited Corporate office of SML ISUZU at Chandigarh. They had meeting with Mr Junya Yamanishi, M. D. And CEO SML ISUZU and Mr Rakesh Bhalla, C . F . O., SML ISUZU. Mr S. K SHARMA and Mr Arun Batra presented collage covering different photos of Annual day celebration of Chandigarh branch, organized on 11 th December 2021. Mr Yamanishi thanked IIMM for this gesture. They also discussed with Mr Rakesh Bhalla, CFO and also heading all Procurement operations regarding training in different aspects of Materials Management. Our team also emphasized that Company should motivate young

professionals who pass PGDMM or PGDSCM&L by giving increment or some incentive. Mr Bhalla assured that some positive response will come shortly.”



*Mr S K SHARMA and Mr Arun Batra presenting collage to Mr Junya Yamanishi M D and CEO SML ISUZU. Mr Rakesh Bhalla CFO of the company looks on.*

## HYDERABAD BRANCH

Webinar on “EXIM Logistic Challenges : Strategies for Overcoming Obstacles & Latest Developments” was Organized by IIMM Hyderabad, On 20<sup>th</sup> Mar’2022.

Speaker : Kamal Jain, Managing Director Cargomen.



Practical Aspects of Export - Import Related Logistics, Customs & Port Formalities - The Challenges & Wayforward How to Address these Problems + Latest Developments & Updates were Deliberated –It was very Interactive &Very Practical Oriented Program.



## KOLKATA BRANCH

'New Members Meet Program' held on Tuesday, the 30th November, 2021 with photos for publication in MMR.

**"Quote":** Kolkata Branch could not organize any offline programme since last week of March, 2020 due to Covid -19 pandemic. However, classes and meetings were held on regular basis via online mode. As the Covid -19 comes to an endemic stage, Kolkata Branch could organize New Members' Meet on Tuesday, the 30th November, 2021 at IIMM Hall. Mr. Prasun Ganguly, Chairman, Membership Sub-Committee, took initiative to introduce new members with the Office Bearers and to give them an overview of IIMM. Mr. Koushik Roy, Chairman, formally welcomed new members to the IIMM family. Mr. Sanjay Gupta, EC Member, shared his valued professional experience with new members. Members were assured to have MMR, monthly journal of IIMM NHQ, either hard or soft copy on regular basis. They were also requested to write article in the wide sphere of SCM for MMR. They were also requested to get in touch with the Institute and to attend programme being organized. Mr. Kaushik Mukherjee, Hony. Secretary, also shared his views with new members and finally offered vote of thanks. New Members were felicitated with flower bouquet, sweets packet and Information Brochure of IIMM. Altogether 25 new members attended the programme.



### 'Inauguration of GDMM (Regular) January, 2022 Session' held on Sunday, 27<sup>th</sup> February, 2022

Inaugural programme of 67<sup>th</sup> Batch of GDMM (Regular) January, 2022 Session was held on Sunday, the 27<sup>th</sup> February, 2022 at 10.30 a.m. at IIMM Hall. Altogether 29 candidates enrolled for the 67<sup>th</sup> Batch. Students were distributed IIMM Kit. Mr. Kallol Ghosh, Vice Chairman, formally inaugurated the Course outlining the course curriculum. Finally, Mr. Kallol Ghosh took 1<sup>st</sup> class followed by Mr. Rajesh Das, Mr. Sumanta Bhattacharyya and Mr. Subhra Chowdhury. During lunch break, students were provided lunch packets.



### Webinar on 'SCM for Quality Patient Care' held on Saturday, 26<sup>th</sup> February, 2022

A Webinar on 'SCM for Quality Patient Care' was organized in collaboration with Betcon Discinsor India Private Limited (BD) on 26<sup>th</sup> February, 2022. Mr. Kallol Ghosh, Vice Chairman, IIMM and GM, Materials at Tata Medical Centre, played a pivotal role in organizing the programme. Mr. Ghosh, in his welcome remarks, explained in brief, the role of SCM for quality patient



care, specially, in this trying period for Covid -19 pandemic. He also expressed that the webinar would help to share and cross-learn the advancements in supply chain management to ensure quality patient care: clinicians and commercial perspective.

Mr. Koushik Roy, Chairman, IIMM Kolkata Branch, welcomed speakers and participants attended the webinar and explained the importance of such webinar. Around 180 participants drawn from the entire Eastern India Health Care Sector, attended the webinar. Seven renowned professionals drawn from Health Care Sector discoursed on various topics. The Webinar was concluded with a Panel Discussion and Q & A Session on SCM an Instrumental Factor for Quality Patient Care. This is the 2<sup>nd</sup> such Webinar in collaboration with Betcon Diskinsor India Private Limited (BD) in recent times and such programme will continue till March, 2023, as usual, for the health care sector.



#### **'Faculty Meet Program' held on Saturday, the 19th February, 2022**

A faculty meet was organized on Saturday, the 19<sup>th</sup> February, 2022 at 5.00 p.m. IIMM Hall. Mr. Amal Chakraborty, Chairman, Education Sub-Committee, welcomed the faculty members attended the programme. In his deliberation, Mr. Chakraborty stressed on scrutiny of synopsis meticulously before project allocation. He also suggested that there should be specific time limit for submission of project. Mr. Koushik Roy, Chairman, IIMM Kolkata Branch, explained the role of faculty members for mutual benefit of students as well as SCM Profession as a whole. Mr. Debasis Mallick, Course Co-ordinator, briefed on the ensuring GDMM Course and switching over to new online platform for virtual classes. Altogether twelve faculty members attended the meet.

### **MUMBAI BRANCH**

IIMM Mumbai branch held a CPO meet, CPO Dialogues edition -1, on 11th March 2022 at Hotel Lalit. The theme was 'Re-Imagining Procurement: Path to Resilient, Profitable and Sustainable Supply Chain'. The event attended by about 25 CPOs, Senior SCM executives started after Vande Matram. The Lighting of lamp was done by Mr. Ashwani Narang -Vice President and Country Head Intelligent Spend Group, Indian Subcontinent, Mr. Ravindra Sharma-Procurement Adoption Director, SAP India, Mr. Ashok

Sharma, Past IFPM President, Mr.H.K.Sharma, National President, IIMM, Mr. G.K.Singh past National President, Mr. Balakrishnan Iyer Past National President, Mr. Satish Palekar, Past Chairman, and Mr. Surendra Deodhar, National Secretary & Treasurer, IIMM.





After welcome speech by Mr. Animesh Shah, Chairman, Mr. Ashwani Narang made detailed presentation on event theme. One of the key takeaway was 'supply chain shocks lasting more than 1 month are recurring & cyclic phenomena and organisations have to develop resilience to overcome shocks quickly'. He also shared survey findings like, 80% executives felt that visibility into supply chain has become more crucial now than 2 years ago, More & more organisations are doing near shoring, Sustainability needs to be added into decision frame work. After doing crisp presentation on agility, visibility etc., Mr Balakrishnan Iyer led interactions adroitly, eliciting nuanced responses from participating executives. Some of the responses were 1. Time to market has crashed from years to weeks as per Mr. Sreekanth Vancheeswaran – Associate Director, sourcing from Colgate - Palmolive, 2 Mr. Pradeep Gattu – Chief Operating Officer – Excel Industries Limited ), 3. Ms. Varsha Kaushal Director - Materials - Hinduja Hospital pointed out that level of engagement with suppliers has gone up. 4. Mr. Anant Murthy – GM – RM, PM and Energy Procurement – Lanxess elaborated on how focus has shifted from COST to VALUE Optimization.

The presentations and interactions were well summed up by Ravindra Sharma of SAP, in his concluding remark. After the presentations and interactions, Mr Satish Palekar was felicitated on his elevation as Executive Vice President & Head Power Independent Company, Larsen & Toubro with a shawl, and small memento at the hands of Ashok Sharma, H.K. Sharma and Balakrishnan Iyer.

The event was well anchored by Surendra Deodhar

## NAGPUR BRANCH

IIMM Nagpur Branch conducted a Full Day Training workshop on Procurement through the GeM Portal, at the IIMM Nagpur Branch office. The workshop was held on the 12th of March 2022. Around 20 delegates from various Private organizations and PSUs participated in the sessions. The resource persons for the session were

- For Training on Buyers Perspective - Mr. Dharamraj Kumar (Chief Manager (MM), Western Coalfields Ltd – Nagpur Area & NC Member, IIMM)
- For Training on Sellers Perspective = Mr. Ketan

Hingway (Partner, Black Gold Group)



Mr. Sukumar Adhikari - Hon.Secretary - IIMM Nagpur Branch, welcomed the participants and briefly described the concept & the idea behind conducting the workshop. The Session was introduced by him and further conducted by Mr. Dharamraj Kumar & Mr. Ketan Hingway. who were the resource persons for both the sessions.

Mr. Dharamraj Kumar, from buyer's perspective, elaborately presented and explained the basics, the vision & idea behind GeM. He also touched upon the framework provided under GFR (the main foundation on which GeM based on and designed further), GeM – SPV. Further from buyers' perspective he elaborated on the various methods of purchasing like Direct Purchase and Direct Purchase with L1, E-bid/Reverse Auction, Proprietary Article Certificate (PAC) Buying, use of Buyer Added Terms & Conditions etc. He also explained in detail the methods of floating the bids like BOQ type bidding, Custom Bidding & Bunch / Catalog



Bidding.

Mr. Ketan Hingway, from the seller's perspective, presented and explained the basics of the eMarketplace, Understanding GeM from Sellers Perspective, User Account Creation, Payment of Caution Money, Applying for OEM Dashboard Panel, Catalog Creation, explaining CMS Quadrants, steps by step bid participation, Auction Participation & order fulfillment.

During the session all the above various aspects of GeM were explained, illustrated & demonstrations were conducted to help the participants in grasping the concepts in a better manner. The participants had a detailed interactive session with the resource team, which was highly appreciated by all.

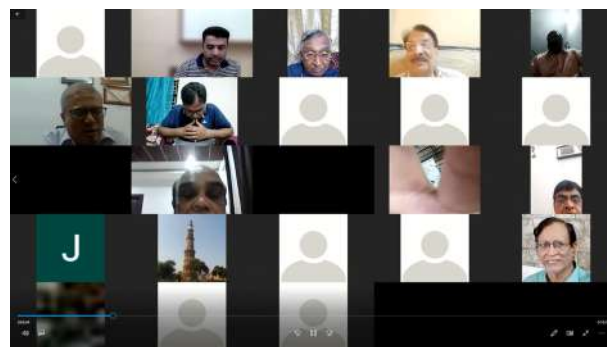
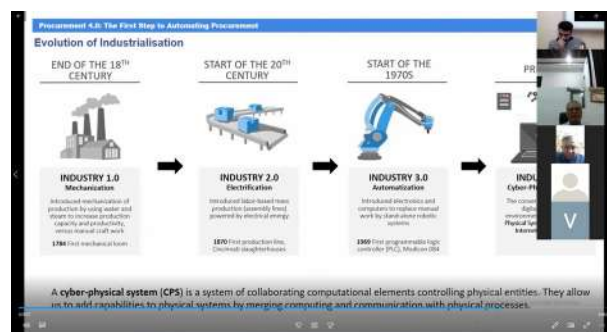
IIMM Nagpur Branch is grateful to all the participants for their overwhelming response and feedback. Since GeM is a dynamic platform, the participants have urged the branch and have expressed their willingness to attend several of such sessions and workshops from time to time.

## NALCO NAGAR BRANCH

IIMM Nalconagar Branch / Bhubaneswar Chapter organized a webinar talk on Procurement 4.0 on 27th March 2022. The speaker was Mr. AmitavaBaksi, Chief Procurement Officer, Tata Steel, India. The program started at 6:30 pm, with a welcome note by Dr. Dibakar Swain, Branch Chairman, IIMM NALCONAGAR Branch. Following that, Mr. H. K. Sharma, National President, IIMM delivered his inauguration speech. Prof. Arijit Mitra, faculty of Operations Management & Decision Sciences Area, XIMB was the moderator of the program.

The talk on Procurement 4.0 by Mr. AmitavaBaksi began with the chronological transitions from industry 1.0 to 4.0 and covered various aspects of the Procurement 4.0 and E-procurement, the modern way which corporations use to automate their procurement functions. It included the discussion on Artificial Intelligence (AI)& Machine Learning (ML), Internet of Things (IoT), Blockchain, Additive manufacturing, Human-machine interaction, Virtual reality, and other technological and data-driven digitization methodologies for making the procurement more and more automated, easy, and transparent. Mr. Baksi also elaborated various tools and technologies that Tata Steel is using to arrange for supplier onboarding process in their e-platform, collect the data from the supplier, rating them in a proper, transparent, and effective way, to make negotiation more efficient, to make vendor payment more efficient and effective and to provide the vendors an appropriate visibility in terms of Vendor Managed Inventory (VMI). He also gave an overview how the company is predicting the price of the coal, an important commodity for the steel production with the help of the data-driven tools and technologies. The talk was followed by a meaningful interaction and Q&A session where people from the audience asked various clarifications from Mr. Baksi on the presentation and he gave nice explanations for each of the queries. The

program ended with a vote of thanks presented by Mr. S. K. Baghar, the honorary secretary of IIMM NALCONAGAR Branch.





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Prepared by Sanjay-IIMM, Delhi Branch

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# EXECUTIVE HEALTH WELLNESS TRENDS THAT WILL BE BIG IN 2022

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**Wellness Trends That Will Be Big in 2022 :** 2021 was intense and surely made us realise the importance of quality living. We experienced the value of human bonds and deep-dived into our relationship with ourselves. In the process, we developed a deeper conscience of eating right and working on our well-being. Be it taking out time to relax, eat right or grow in our personal space...our mindset has taken a shift from taking things for granted to making our wellness the utmost priority. Well, this journey of wellness continues, as it should. And so, we bring to you some of our favourite wellness trends that we think might grow on you.

## BODY

**Mindful eating :** Mindful eating is one of the essential habits that one should instil to be in more sync with their mind and body. It's not about being perfect at making food choices or alienating yourself from guilty pleasures, it's more about being mindful of what we put in our bodies and understanding how it impacts us. It's a meditation-based lifestyle change that can not only help us strengthen from within but can also help with a positive mental space, food craving & weight management. Intermittent fasting is an interesting way of achieving it by allowing yourself to eat what is healthy and yet indulge in food that brings you joy. The logic is to balance out your body's feeding and burning period. To understand the science behind mindful eating and intermittent fasting, read our two cents on it here.

**Gut health connection :** We can't emphasize enough how important gut health is, sadly, it is one of the most underrated concepts. Gut health is directly connected to the majority of our wellness system, after all, it's our power-generation arena. What we eat gets degenerated and triggers all the organs to act on it ...so if a lot of food that doesn't suit us, it sends our organs a signal to over-compensate for it and that can mess the integrity of the system. A healthy gut (gastrointestinal tract) can keep your immune system intact and has the power to trigger moods. Feeling fidgety, restless, bloated, cranky, are a few of the many moods and experiences that can be signs of your gut asking for attention. Choosing fresh, green and raw vegetables over processed/packaged food...drinking water over sodas are some of the ways to strengthen the gut and get nutrients absorbed. We suggest eating locally produced organic fruits and vegetables, cooking for yourself and finding the connection between your gut and brain via delicious food. This can help you feel lighter, happier and be sustainable!

**Biohacking :** Biohacking is one of the smartest ways to train your body by understanding how it functions and

what works best for you. Let's break it down for you, we all have a body type, eating patterns, things that work for us and things that don't, so the idea is to make small changes in your diet and lifestyle and track how it affects you. Also, you don't have to go crazy and conduct experiments, just sticking to changes that have a positive outcome and it can be anything like yoga over CrossFit, kale over lettuce, oat milk over dairy, intermittent fasting over dieting...just be cognizant of how these changes make you feel and align with your goals since you are the ultimate expert of your body.

## MIND

**Emotional wellbeing :** With work becoming stressful every day and work-from-home blurring the lines of personal life...it is essential to take charge of your emotional wellbeing. This needs to come from a space of requirement and not a suggestion because deteriorating mental well-being can harm our functioning in a crucial way. Be it Flexi-work hours, making time for things that bring you joy, working towards dream and passion projects, you should do everything that brings you that stabilization and normality. We should be proud to acknowledge our mental health and find ways to strengthen it every day, it could be through counselling or therapy...trust us, there is no shame in getting guidance on how to deal with struggles via professional help!

## SOUL

**Spiritual awareness :** Often, we are liberated or withheld by the norms or layout of a religion. From the way, we eat to what is the meaning of almighty... it's all laid down to us as a manual. It is important to understand what religion means to you and what practices make you feel spiritually aligned. Find the right balance between the practices that help you sustain and support the connection with the universal power...a connection that uplifts you in more ways than one, and brings a positive change in you. This does not need to be a life-altering change, something as small as meditation or a gratitude prayer could **help you stay humble and grounded**.

Growth and well-being go hand in hand, we can't expect to touch the sky without a stronger root — that is your body, mind and soul. So, live a little, laugh out loud and cherish the joys of life with small tweaks and changes. It is time to set the rhythm of your body and mind to the new 2022 mantra...cheers to new changes and another chance for us to get it right.

Source: nmag.in

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