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Special Issue on

GLOBAL SUPPLY CHAIN



GLOBAL LOGISTICS NETWORK





Indian Institute of Materials Management

IN PURSUIT OF EXCELLENCE IN SUPPLY CHAIN AND LOGISTICS MANAGEMENT

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From the Desk of Chief Editor & National President



Global supply chain, as we talk of it, comprises of multiple sources at multiple locations beyond national and international boundaries making this earth a one global market. Global Supply Chain is growing at a substantial rate of 10-12% of Global GDP (including logistical activities) which indicates a substantial upward shift in usage, preferences and priority of end user.

Supply Chains are continuously evolving with the advent of new technologies and integrating them at every possible point of supply chain, to mitigate the risks, enhance the productivity of each stage of product's lifecycle, get rid of inefficiencies, and deliver the products timely and seamlessly. However, it is not wrong to say that our Supply Chains are becoming efficient but brittle also, as can be seen in case of recent Covid 19 pandemic or a war or a natural disaster. It has affected and tested every part of the value chain, from raw material sourcing to delivery of the product to end customer. It has exposed the vulnerability within the supply chain be it commercial, operational, financial and organizational for majority of companies across the globe.

Because of outsourcing, off-shoring and insufficient investment in resilience, many supply chains have become more complex and fragile which is evident from data of past two years when every country was under the series of lockdown during COVID-19. It has highlighted some of the major disruptions across various supply chains like over reliance on one or other particular source of production, lack of sufficient domestic sources, logistical & warehousing issues, production delays and resiliency gaps in supply chains.

Though, the pandemic has complicated the global supply chain and placed it out of the order for some time now but we need to analyse the after effects of this pandemic and answer the unanswered questions that has arisen out of it like what are the short term & long term goals to stabilize the global supply chains and what are other strategies to cope up with such disruptions in future.

It is therefore, more important than ever to ensure as adaptive, flexible and agile supply chain as possible to address the issues arising out of any unexperienced and unwanted circumstances. Business entities across the globe are working on friendshoring i.e to develop their own network of trusted vendors to help manage disruptions and support continuity of business operations. Cultivating a resilient supply chain means that the organization can be better at anticipating, reacting and planning against the unexpected by enabling cross-functional integration and collaboration with its ecosystem of vendors.

Investing in digital infrastructure, automation, digitalization of supply chain, use of AI, Machine learning, IOT, Big Data Analytics etc. will definitely help us in making our supply chains more transparent, efficient and controllable but it is equally important to have supply chain leaders who can foresee or anticipate turbulent times, assess the preparedness and can scale such crisis. Their experience and learnings through pandemic like situations will help in balancing the short term and long term priorities so that primary objective of supply chain is not lost.

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CURRENT TRENDS IN GLOBAL SUPPLY CHAIN

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The latest trends in supply chain and logistics focus on smart, tech-driven management to reduce operating expenses and increase efficiency. In the Indian context, the new Logistics Policy released, is a giant step towards reducing logistics cost and bringing in productivity and efficiency in our logistics and supply chain system. The supply chain process is constantly evolving and hence undergoing constant changes across countries. Logistics and supply chain is vital for any business in terms of supply of quality raw materials, efficient manufacturing process, as well as tracking, transport, and storage of the finished goods. Companies implementing well-designed supply chain practices can meet consumer needs in a more expeditious and timely manner. This strengthens customer relationships and loyalty, translating into revenue boost and acquisition of new customers through positive word of mouth.

Supply chain digitization : Digitization is the process of using the latest tech solutions together with other physical and digital assets to redesign logistics practices. This way, they can adjust better to the fast-paced, highly competitive, omni-channel business environment. Digitization improves the speed, dynamics, and resiliency of the supply chain operations, leading to greater customer responsiveness and ultimately higher revenue. By embracing digitalization, companies can experience real value, increased revenue, and market valuation. Digital supply chains will continue to be essential elements of numerous trends on this list, including visibility, resilience, and agility. Digitized networks use technology to augment workflow and data collection — meaning that this trend has ramifications on both talent and data infrastructures. Successfully digitizing supply chains requires large-scale sensor implementation via the internet of things; shared internal and external interfaces, such as cloud-based networks; and process automation and verification. The adoption of tools such as blockchain, artificial intelligence and machine learning will meaningfully improve decision-making. To reap the full benefits of digitalization, companies must fundamentally redesign their supply chain strategy. It's not enough to just embellish it with digital technology. In the field of digitization, the Internet of Things (IoT) holds a prominent place as a highly transformative technological solution in the logistics sphere. IoT refers to a system of interrelated computing devices allowing

transfer of data over networks without human input. It helps companies monitor inventory, manage warehouse stock, optimize fleet routes, and reduce dead mileage.

Artificial Intelligence : Advanced AI solutions have numerous applications in the supply chain, especially the warehousing segment. This includes use of gesture recognition solutions instead of keyboards and mice in the procurement process. It also includes autonomous vehicles (self-driving cars), designed to navigate without human input. The concept of robotics and automation is also widely implemented in the supply chain. The latest generations of robots are easier to program, more flexible and affordable. Their role is to assist workers with repetitive and physically challenging tasks.

Stronger collaboration in the supply chain process : Solid procurement practices and stronger relationships with suppliers should be considered a priority in the supply chain process. For instance, the procurement department can utilize the business data on suppliers to enhance supply chain decisions, such as supplier evaluation and recommendations of the best business partners. Also, effective cooperation can help assess risks in the supply chain based on global industrial and political trends to prevent or mitigate danger of stock shortages. Meanwhile, collaboration in the supply chain can streamline internal processes and reduce overutilization of resources spent on administrative and other time-consuming tasks. As a bonus, it can help generate referrals from satisfied business partners and bring your more business.

Risk management and supply chain resiliency : There's no doubt that companies must seriously consider supply chain risk management to prepare for undesirable events. The increasing outsourcing practices, offshoring, product versatility, supply chain security and substantial interdependence throughout the supply chain further accentuate the importance of dealing with risks in the supply chain. Still, no matter how sound the plan is, it can't prevent things from happening. This is where supply chain resiliency comes into the picture. It's a real measure of the ability of a company to withstand disruptive events.

Steps to make the supply chain more flexible and resilient include visibility throughout the supply chain

so disruptions can be detected on time, close cooperation with suppliers and distributors so alternative supply routes can be found, and a good incident response plan to provide a course of action when disruption occurs. Supply chain resilience will continue to require data expertise, novel solutions and strong collaboration among global networks that are highly complex and interconnected. Key strategies include diversification of suppliers, production capabilities and transportation processes, as well as finding alternative materials and non-traditional partnerships. Resilient supply chain design will also be critical to mitigating adverse events faster than the competition, providing excellent customer service, and generating value and market share.

Enhanced supply chain visibility : Proper analysis of supply chain data can significantly improve business forecasting and decision making. It can also optimize the use of resources involved in inventory management, storage, and transport. Supply chain visibility gives insight into what's happening at each point of the supply chain. It's extremely important for the efficiency of the entire supply chain process, including procurement, manufacturing, transport and delivery. One of the benefits of improved chain visibility is real-time inventory management. It involves use of mobile point-of-sale systems and sensors, and takes inventory management to a whole new level. Visibility will be a key objective for organizations under pressure to achieve true transformation, satisfy customers and capture new markets. People are willing to pay more for ethical and responsible business processes, and this will be a catalyst for investment in supporting technologies. For instance, as the ability to track and trace goods to the source is increasingly expected by consumers, the internet of things will continue revolutionizing real-time visibility. Look for new business models and heightened trust and collaboration within and beyond organizational boundaries. For instance, instead of paying for purchased goods in a store, people can just take the desired items, and get charged for the goods on their cards automatically. Furthermore, real-time inventory management allows the goods to be replaced as they are consumed.

Supply chain talent : Supply chain talent is critical to supporting ongoing industry advances, solutions, and frameworks — and as such, people at all levels of supply chain should expect to experience new ways of working. Anticipate a convergence of training, plus better pay and benefits for existing employees, as well as hiring talent with foundational skills in data analytics. Organizations must be creative when attracting, reskilling, and retaining talent, as traditional approaches may not be as relevant to future supply chain needs.

Growth of e-commerce : The growth of e-commerce is perhaps the most obvious and commonly understood

force affecting today's supply chains. All around the world, warehouses are jam packed — some even have products piling up outside their doors. In fact, this incredible demand squeeze represents the longest ongoing expansion peak in five years. E-commerce and omnichannel fulfilment will continue to shape the way organizations identify and establish key priorities, creating challenges with regards to scale and network efficiency while producing new opportunities to gain competitive advantage.

Supply chain agility : Supply chain agility will be essential to creating flexible networks that can effectively respond to dynamic customer demand and ever-increasing uncertainty. It will be important to proactively identify ways to increase responsiveness through variable cost structures. However, as there is no one-size-fits-all approach, organizations must also foster continuously innovative cultures. The agile supply chains of the future will be those that can react quickly to changes, delays, and unexpected events in order to meet customer expectations, outpace the competition and drive growth.

Cybersecurity : Cybersecurity is critical to protecting networks from cyberattacks, which continue to be a dominant threat to supply chains around the world. The explosion of data and data-driven organizations through previously mentioned digital tools is creating many more areas of vulnerability. This interconnectedness means supply chain partners can inadvertently expose each other and their customers to privacy breaches, identity theft and worse. Expect greater collaboration when safeguarding networks, devices, people and programs. In addition, more organizations will choose to invest in redundancy, firewalls, and advanced antihacking technologies and employee training.

Customer-centricity : Customer-centricity is on the minds of supply chain professionals everywhere, as consumer expectations continue to expand and — as noted earlier — people demand ethical, sustainable business practices. Managing a successful supply chain will require upskilling talent with greater cross-functional and analytical skills so people have the training to support these new levels of customer-centricity. Those supply chains that find ways to meet today's escalating and intense customer expectations at the lowest cost will prevail.

As mentioned above, supply chain logistics is constantly changing and the current trends will continue to make supply chain system a very competitive, professional, and mean process, thus if implemented carefully, will prove to be an optimiser of costs, increase all round efficiency and boost productivity all around.

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ROLE OF SUPPLY CHAIN FOR INDIA VISION 2025

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Introduction : In today's world, the long term survival of any business entity is dictated by the efficient supply & delivery process that entity has implemented. To succeed in a dynamic demand & supply environment, Indian Companies need to ensure that proper coordination is in place between their suppliers & their customers until the last of the supply chain demands are satisfied without delay. This necessitates the need for tracking the inventory on hand augmented by a solid order & supply chain management. This is very crucial to cost control, availability to supply on demand, maintain market control & eventual profitability.

To meet this critical need to handle the demand & supply effectively, supply chain management is an important component. Companies are investing crores of rupees in SCM product & applications with SCM, a business can estimate future demand for its products, enabling planners to accurately estimate future needs for supply & extends to execution with the planning of their plants, transportation & logistics.

With much of competition from global players in the market, companies in supply chain business face multiple challenges. Materials & Production cost must be minimized without sacrificing quality or timeliness. Inventory levels must be optimized to keep the balance sheet healthy, order gets shift with in hour, & when that is not feasible, customers must be notified promptly of delays.

In any supply chain, there is one last entity on which the entire process depends on "the customer" all manufacturers, suppliers, distributors & retailers will only be successful if they collaborate with each other in satisfying the customer demand. If one supply chain fails to meet the demand, there will be a chain reaction that will eventually affect the end customer supply resulting in customer dropping their business as well.

2.0 Global Economic Scenario: - The Economies of the Asian region are growing at fast pace in the global economies. Asia is a host to three economies viz. China, Japan & India and accounting for more than 35% of world GDP. Today Asia's share in the world GDP exceeds that of European Union & the US. Being the fastest growing economies of the world, over past 2 years,

china & India contributed 73% to the Asian growth and 38% to the World GDP growth. Asian region has increasingly become a major centre of World Trade, Global capital flows and other Macro-Economic parameters. One of the major strength of Indian Economy is that India will remain one of the youngest Countries in the world in the next few decades. This demographic dividend is seen as inevitable advantage provided prerequisites such as skill upgradation & sound governance to realize it are put in place. In terms of business environment, the impressive growth coupled with market orientation of the economy has being a bottom – up – exercised with a very broad based growing entrepreneurial class. These tendencies are perhaps reflection of a penchant for innovation among growing entrepreneurial class in India, imbued with professionalism & seeking to be globally competitive.

3.0 India Vision 2025:- Our vision of India 2025 is of a country with a well-developed network of roads and railways and adequate capacity to handle the growth in demand for transport. It is expected that the volume of road traffic will multiply about five-fold, carried over a 70,000 km network of National Highways, including 5,000 to 10,000 km of expressways, linking the golden quadrangle of Delhi-Mumbai-Chennai-Kolkata-Delhi as well as northern, southern, eastern and western portions of the country, mostly with four or more lanes. State Highways with at least two way lanes will link most districts. Rural roads will provide access to the furthest outlying villages. Technological progress will generate vehicles that are pollution free and fuel-efficient. An efficient public transport system will lead to a reduction in the population of two-wheelers in major urban areas.

Based on projected GDP growth of 8 per cent per annum, the total freight traffic is likely to reach about 5,500 billion tonne km by the year 2025, five times the level in year 2000. The proportion of manufactured products to bulk cargo will also rise, with a larger proportion of liquids being carried through the pipelines. General merchandise will travel longer distances and in much smaller consignments, favouring smaller carrying units. The rising value of consignments will place a higher premium on the speed of transit in order to minimise inventories. The total logistical

management of transportation, marketing and distribution will become commonplace for most general merchandise. These changes, together with the impact of other factors such as energy efficiency, environmental pollution, and technological changes in each mode, will result in changing preferences for alternative modes of transport.

Passenger traffic is expected to increase more than four-fold over the next 20 years. For long distance travel, the demand for air services will grow rapidly, as speed becomes an increasingly important consideration. Already more people travel between Delhi and Mumbai by air than by rail. Overnight sleeper class travel will continue to be the railways' strength, as long as booking, reservations, comfort and other customer services are continuously enhanced to keep pace with rising customer expectations.

For medium distances up to 500 kms—with four-lane highways connecting the country, expressways coming up close to the main metro cities, and car ownership increasing rapidly—the bulk of the passenger travel may start moving towards 'own vehicle travel', a phenomenon already observed in most countries. Fast inter-city rail services will have an edge over air travel for this segment of traffic.

Road transport is best suited for short distance traffic, except where volumes increase to very high levels and rail-based mass rapid transport offers a cost-effective alternative.

The railways will have to be expanded to handle a three-fold increase in traffic. Improved customer service, comfort and safety, a reduction in freight costs and tariffs, elimination (or at least reduction) of the uneconomic services, non-paying projects and subsidies will be necessary for this. India will need airports of international standards for passenger and cargo handling and modern handling systems at major ports to reduce delays in berthing. Institutional arrangements will need to be in place with adequate funds for proper maintenance, especially of roads. Urban transport systems will be needed in all cities with a population of a million plus.

4.0 Supply Chain Management:- The central idea of supply chain mgmt. is to apply a total system approach to managing the flows of information, materials & services from raw material suppliers through factories & warehouses to the end customer. Recent trends such as outsourcing & mass customization are forcing companies to find flexible ways to meet customer demand. The focus is on optimizing core activities to maximise the speed of response to changes in customer expectations.

Virtually every industry is broadening its product lines

to provide the variety of choices that customers want. The challenge is not only to produce so many different products but also to distribute the products to a global customer base.

Supply chain mgmt. is important in business today. The term supply chain comes from a picture of how organizations are linked together as viewed from a particular company. Many companies have enjoyed significant success due to unique ways in which they have organized their supply chain. For example, Dell Computers, skips the distribution & retail steps typical of a manufacturing supply chain. However, a good supply chain design for one company may not work for another. The supply chain should be structured to meet the needs of different products & customer groups.

Measures of supply chain efficiency are inventory turnover & weeks of supply. Efficient process should be used for functional products & responsive processes for innovative products. This alignment of supply chain strategy & products characteristics are extremely important to the operation success of a company.

Companies that face diverse sourcing, production & distribution, decisions need to weigh the cost associated with materials, transportation, productions, warehousing & distribution to develop a comprehensive network design to minimize cost.

5.0 The role of key component of supply chain :- The role of key components of supply chain for fulfilment of India Vision 2025 are discussed as under:-

5.1 Warehousing

In India, the role of warehouses in the overall supply chain was always underplayed. But the present concept of integrated supply chain management has to focus on all components viz. transportation, warehousing, inventories, information etc. so as to improve the efficiency of supply chain which is vital to the economy of the nation. The four major types of warehousing in India are for the storage of Industrial goods, white goods, Agricultural goods and Perishable goods.

Warehouse is an integral part of logistics, a tool for competitive advantage. Warehouses are required to hold inventories to balance the demand and supply. It acts as a buffer between uncertain supplies and manufacturing plans and cyclic market requirements in the outbound logistics. Warehouses are also required for preservation, storage of goods, as consolidation hubs and as distribution centres.

Today manufacturing companies are concentrating more on the core activity and have gone ahead outsourcing the warehousing and transportation to 3PL service providers and to save on inventory, they prefer to maintain a stock & replenish on need basis.

There is a trend to develop efficient warehousing to support the integrated logistics needs. Older warehouses were mere godowns without proper material handling facilities leading to wastages, damages, obsolescence and higher cost of operation, are steadily being replaced by newer automated warehouses with advanced, computer controlled material handling system requiring few employees. This will bring about transformation in the logistic and warehousing industry. The entry of multi national companies in India have brought the international logistics concept and the trends are to outsource the supply chain management function to the third party logistics (3PL) service provider to provide world-class services.

Indian companies have evolved from conventional transport to a single window logistics service provider with a value addition of warehousing, inventory management, distribution and other customized services. The warehousing has evolved lot of value added services. With the vibrant economy, warehousing would be more adaptive, flexible; customers focused and continue to be a key driver to provide a single window logistics solutions.

5.2 Inventory Management:- Inventory management will play key role as it affects customer satisfaction. Firms need to maintain the delicate balance between carrying too little inventory & carrying too much. Thus in managing inventory, firms need to balance the cost of carrying larger inventories against resulting sales & profits. Many companies would greatly able to reduce their inventories & related cost through just in time logistics systems. For example, Dell a master in just in time producer have realized substantial savings in inventory carrying & handling costs. By RFID in place, companies would know at any time exactly where a product is located physically within the supply chain.

5.3 Transportation:- The choice of transportation carriers affects the pricing of products, delivery performance & conditions of the goods when they arrive. In shipping goods to its warehouses, dealers & customers, the firm would be choosing among 5 main transportation modes; Truck, Rail, Water, Pipeline & Air alongwith an alternative mode for digital products ; the internet. In choosing a transportation mode for a product, shippers would be balancing many considerations, speed, dependability & availability cost & others. Thus, if a shipper needs speed, Air & Truck are the prime choices for transportation.

5.4 Radio Frequency Identification (RFID):- Radio Frequency Identification is an automatic data collection technology that was tiny computer chips attached to objects that track products as RFID tagged items move through a supply chain. It is an electronic labelling &

data collection system using radio frequency signals to identified & count closely spaced items.

India emerges as natural choice for firms engaged in RFID product development because of its highly skilled work forced & strong IT based. India is also being used as a centre for executing RFID implementation for entire Asia pacific region.

RFID has best application in the area of SCM. If a store shelf is empty of a popular product, with RFID technology, a computer could send a e-mail to alert about the shortage. The store could than automatically notified the distributor & manufacturer about the product for more products to be shipped. All the members in the supply chain stand to benefit-the customer, the retailer & manufacturer.

RFID, a tab on goods as they move throughout supply chain process, proactively communicate information about their identities & locations without any human interventions.

SCM in India is in a nascent stage. It is difficult to find many companies who are moving 10 – 100 millions cartons a year. Further, retail sector is just getting organized & thus only a small percentage of retailers will consider using RFID for managing their supply chain. Sectors like retail apparel, aviation & energy are experimenting with RFID technology in a big way. M/s Bartronics, Hyderabad based company manufactures the smart RFID tags. Wipro, Satyam & Infosys are providing the Hardware Solution, Software services & consultancy. Dr. Reddy's Laboratories, M/s ITC, M/s L&T, M/s Maruti Udyog, M/s Ashok Lenant & M/s Pantaloon are the companies who have begun use of RFID in their supply chain.

6.0 Conclusion :- In this Era of competition, the large Indian manufacturer are exercising not only to exercise control on cost but also to use all the components of supply chain management including logistics, warehousing as a means of differentiation in both domestic & international market. Due to the advantage of forthcoming road infrastructure, software capabilities, forthcoming private telecom network, cheep labour work force & most importantly the availability of end market, the supply chain management is going to contribute in a big way for achieving India Vision 2025.

Government of India needs to take challenge in shorting out the issues of custom clearance, flexibility in labour laws & other related issues so that multinational are encouraged to go in for massive investment to give boost to economic development of India for fulfilment of India Vision 2025.

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GLOBAL SUPPLY CHAINS INTEGRATING GLOBAL + LOCAL SHIFTING TO GLOCAL

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Introduction: Global Supply Chain advanced due to Globalization and Increasing Free Trade among Countries. Globalization undoubtedly has many advantages & benefits of better access and integration of supplies at global level. However, globalization & global supply chains are more prone to supply chain disruptions. COVID Pandemic's impact on global trade and supplies is so devastating 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.

So, businesses have started looking for offshore to nearshore and local sourcing.

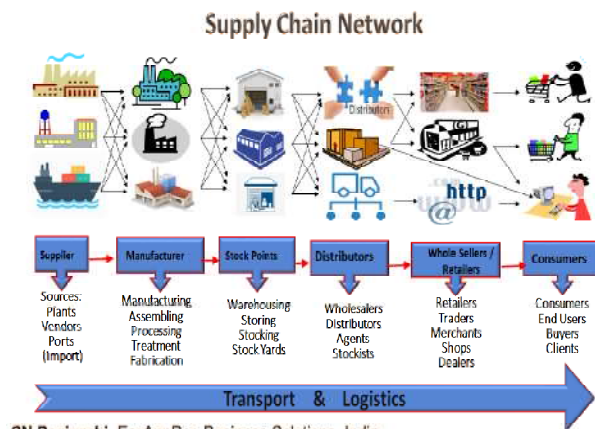
In this article, let's discuss on concept of "**Glocal**" – a combination of global & local, and how it embraces **global mindset, reach & access**, but also **accommodate & promote** the values, cultures, ideals, interests and needs of the **local businesses**.

Key Words: Globalization, Localization, **Glocal**, Global Supply Chains, Global Supply Chain Disruptions, Atmanirbhar.

What is Supply Chain?

First let's Discuss & Understand what is Supply Chain.

A supply chain is a **Chain of Supplies** - is the **Network** of all the Individuals, Organizations, Resources, Activities and Technology involved in the **Creation** and **Supply of Products or Services**, from the **Point of Source** to the **Point of Consumption** through a **Series of Supplies with Value Creation at each Stage** that is from **Supplier to Manufacturer to Distributer to Wholesaler to Retailer and Eventually Delivery to the End User or Consumer**.



What is Global Supply Chain : Global Supply-chains are **Networks** of Supplies across the **National Boundaries** that fuel Global Business.

Global Supply Chains involve the Flow of Goods or Services; Information; Finances; Value and Risks across the Global Partners who may span across Multiple Continents and Countries.

For example, if a company sources Raw Materials from China, Manufactures the Product in India and then sells it to customers in USA – it's a Global Supply-Chain.

Global Supply-Chain Management is defined as **Management of a Network of Supply and Distribution**

of Goods and Services throughout the **Global Network to Gain Competitive Advantage**.

Global Supply Chain Management involves **Effective Planning, Organizing and Coordinating** of entire supply chain functions as an integrated whole from Global Sourcing to Production, Distribution Logistics, Managing Resources and all the Related Activities to ensure successfully achieving business goals at **Global Level** within the given constraints.

Global Supply Chain: Advantages : Global Supply Chains have **Advantages of Sourcing from Low-Cost Countries with Low Production Costs, Lower Labor Rates, Low Transactional Costs, Low Tax Incidences or other Benefits and Competitive Advantages** which makes the Businesses Attractive to **Expand their Operations and Transactions Globally** with objective of **Improving their Financial Performances and Bottom Lines**.

Apart from Cost Advantages, the other Benefits of Exposures to Global Supply Chains are Large Supplier Base, Wide Range of Supply Availability with Multiple Options, Increased Competition & Better Negotiating Power, Adaptive to Global Trends, Flexibility, Ability to Quickly Sourcing, Speed of Delivery, Global Reach, Access to Creative and Innovative Products or Services of Highest Standards of Quality, Technology, Optimized Inventory, Opportunity for Organizations to Learn Current Trends in doing Business, Proactive Strategy, Sharing Expertise and Upskilling, Effective Production Methods, Innovative Business Practices, and Optimal Distribution Methods as they Interact and Transact with Multiple Global Suppliers, Supply Chain Partners and Service Providers.

Global Supply Chain: Disadvantages: Although there are many advantages of Global Supply Chains, there are many Risks, Uncertainties involved and several Difficulties & Complications associated with in Global Supply Transactions.

Whilst engaging in global supply chains offers many benefits as discussed, Global Supplies involves the management of different Transactions across Different Countries with Varied Regulations, Wide-ranging Governing Practices, Cultures, Religions, Believes, Habits, Time Zones, Languages as well as Ethical Good Practice and Different Currencies.

One has to Understand, Adapt, Adjust, Conciliate, Cooperate, Collaborate and make the Transactions mutually benefit to all the Global Partners.

The disadvantages of global supply chain management include Instability (Political, Economic, Social & Environmental Instability), Fluctuating Exchange Rates, Tax / Duty Structures, Government Regulations, Different Customs Formalities in Different Countries,

Differences in Standards and Regulations, Language and Communication Barriers, Time Zone Differences etc.

Also global supply chain transactions Require Expertise for Planning, Sourcing, Negotiating Contracts with Special Terms, Difficulty of Understanding Country Specific Regulations & Restrictions, Complications in understanding International Transactions, Arranging Cross Country Logistics, Longer Lead Times, Supply Shortages, Backlogs, Bottlenecks, Challenges of Transportation & Shipping, Certain uncertainties Associated with Estimation of Costs, Challenges of Dealing with Unknown or Strange Chancel Partners, Banking & Payment Complexities, Coverage of Risks & Insurances and Financial challenges etc.

Supply-chain disruptions due to Pandemics or Natural Calamities or Wars may Drag for Longer Period which we have witnessed during COVID – 19. Civil Wars (Russia & Ukraine War; Tensions of Probable War between China & Taiwan), Trade Disputes (ongoing US – China Cold War), Trade Barriers, Blockages etc may have greater repercussions and may mute global trade, may lead to supply chain disruptions and cast doubt on the viability of many business and supply chain transactions.

Globalization: Global Supply Chain advanced due to Globalization and Increasing Free Trade among Countries.

In the economic context, Globalization refers to the **Process Characterized by Liberalisation, Borderless Globe opens up new markets with Free Trade Flow of Capital & Financial Products, Investments, Goods, Services, Technology, Information and Human Capital across National Boarders** with Increased Interaction, Integration and Interdependence among the Nations around the Globe to Foster Easy Access to Foreign Resources, better Exchange, Movement and Cooperation of Businesses, Organizations, and Countries to built Economic Partnerships for Mutual Benefit and Facilitate Common Good based on **Competitive Advantage** of each Participating Nation or Region.

Globalization enables access to global Talent, Materials, and Products that were otherwise out of reach. Globalization can enrich Business Processes by offering companies a wider more **Abundant Pool of Resources** to pick from. **Cross Boarder Information Flows may Promote Growth.** Globalization Encompasses Growth on a Worldwide Scale.

In the past few decades we have witnessed growing globalization as more countries and regions of the world become intertwined Politically, Culturally and Economically.

National Competitive Advantage : Globalization evolved and advanced on the premises of basic concept of **Comparative Advantage** which is defined as Ability of a Country to Produce and Sell Goods and Services on an International Scale more Efficiently and Inexpensively than another. As Technology, Infrastructure, Transportation Systems, and Communication Systems, Economic, Political, and Cultural Exchanges have improved, competition among different countries has soared.

Globalization leads to **increased competition**. Competition in global business environment occurs when different nations offer interchangeable services or products or other resources. **National Competitiveness** is a country's ability to sustain and increase its share of international markets and at the same time to improve its people's quality of life.

Among governments, there is a growing tendency to experiment with **various policies intended to promote national competitiveness**—from efforts to manage exchange rates to new measures to manage trade to policies to relax antitrust.

Attributes of a National Competitive Advantage : **National Competitive Advantage** is measured by a set of factors, policies, and institutions that determine a country's level of productivity and competitiveness. There are Four broad Attributes of a National Competitive Advantage : **Factor Conditions** (The Factors of Production, such as Natural Resources, Skilled Labor or Infrastructure); **Demand Conditions** (The nature of home-market or Domestic Demand); **Related and Supporting Industries**(The presence or absence in the nation of supplier industries and other related industries that are internationally competitive); **Firm Strategy, Structure, and Rivalry**(The conditions in the nation governing how companies are created, organized, and managed, as well as the nature of domestic rivalry).

According to prevailing thinking, Government Policies, **Institutions, Infrastructure**, Innovation, Technology Development & Absorption, **Macro-Economic Stability, Health and Primary Education, Higher Education and Training, Market Size, Market Conditions & Efficiency, Labour Market Efficiency (Labour Cost), Financial & Capital Market**, Interest Rates, Exchange Rates, Economies of Scale Country's overall Business Networks and Supporting Industries are the most potent determinants of competitiveness.

Is a relative concept. It is an approximation of a country's ability to grow and to compete with other countries for human capital, investments, and other resources.

Shortcomings or Flip Side of Globalization : On the flip side it develops Unequal Economic Growth, Exploits Cheaper Labour Markets, Causes Job Displacement, Increases Potential Supply Distortions in some Extreme Dangerous Circumstances and many more as per below:



Global Supply Chain Disruption : Globalization & Global Supply Chains are more Prone to **Supply Chain Disruptions**.

A Supply Chain Disruption is any **Sudden Change or Crisis** – be it Local or Global – that **Severely Impact the Supply Chain Activities**, Processes and operations.

Supply chain disruption is defined as a **Major Breakdowns in the Production or Distribution / Supply and other Major Functions of a Supply Chain** that Challenges your business's ability to Plan, Source, Make, Deliver and / or Sell Products and other Transactions when an External Force Acts upon beyond the Control of the Business.

The Adverse Impacts of Supply Chain Disruptions may in Certain Cases overshoot the Benefits of Globalization.

You may refer to YouTube "Global Supply Chain – Uncertainties Galore" @ below Link

<https://www.youtube.com/watch?v=CqCRtd3pQOM&t=4s>

Global Supply Chain Disruptions : Major Causes



Consequences of Supply Chain Disruptions : In the aftershock of the **COVID-19 epidemic**, followed by many other events like **Suez Canal Supply Crisis, Russia – Ukraine War, Escalation of Tensions & Disputes between China-Taiwan; Cold Trade war between USA & China** etc Disrupted and Continue to Upset the Supply Chain Leading to **Risks in Terms of Delivery, Quality, Costs, Service Performance, Supplier & Customer Relationships.**

These Supply Chain Disruptions 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.

Global to Look for Local : The coronavirus pandemic and subsequent other events are forcing companies to make a Trade-off between Efficiency and Resilience in Global Supply Chains.

These Adverse and Unfavourable events Triggered Disruption of the Global Supply Chain - hampered factory operations and sown chaos in Global Supply Chains – 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 goneawry.**

Govt. Regulations / Restrictions for Mobility, Lockdowns, Increased border controls and customs regulations 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.**

Pandemic's impact on global trade is so devastating 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.**

So, **Businesses have started looking for Offshore to Nearshore and Local Sourcing** to offset and Counterbalance the Adverse Impacts of Global Sourcing and the Associated Supply Disruptions. Among Businesses, there is a growing Tendency to Explore & Experiment with various Policies and Strategies Intended to Promote & Strengthen Local Competitiveness.

Advantages of Localization : Localisation has **Advantages of Developing & Caring for Domestic Industries & Local Business Community. It also termed as Protectionism, Creating Entry Barriers to Foreign Entities, Providing Unreasonable Shelter to Domestic Industry, Greater Self-Reliance, Self-determination.**

- Ø Encourages Local Suppliers - **Develops Local Competitive Advantage.**
- Ø Localization ensure **Less Distortions in case of Supply Chain Disruptions** as there is limited movement of people and goods in a limited local area.
- Ø **Better Utilization of Local Resources** & Value Creation Locally.
- Ø Local Resource Engagements & **Creation of Better Employment Prospects** for Local Talent.
- Ø **Balanced Development of Local Economy & Growth.**
- Ø **Avoids Skewed Economic Growth** on Misconceived (Not the True Sources) Concept of Competitive Advantage and Concentration of Development in Few Pockets of Developed Nations.
- Ø **Reduced Dependency on Supplies from Overseas.**
- Ø **No Need for Trade Barriers** – Avoids Trade Restrictions, Constraints between Nations.
- Ø **Creates a Long-Term Business Eco-System** with Supporting Supply Bases in the Local and Native Country.
- Ø **Shorter Distances for Shipments & Transportation** – So Less Consumption of Fossil Fuel, as a Result Lesser Emissions & Pollutions and Greater Environmental Concerns.

Balanced Approach



Like there is Two Sides of a Coin, either Globalization & Localization both have Advantages & Disadvantages.

In the name of Globalization, Allowing Free Entry of all for all with Boundaryless Borders making Homes turf a Dumping Ground is Not a Good Economics. Skewed and Concentric Economic Growth with too much Specialization in Certain Regions or Countries is Antithesis of Liberalization. Corona Exposed Weak and Fragile Points of Globalization. Semiconductor Chip Shortage – Reaching Crisis Point Worldwide really Exposed as a finer Example of shortcoming of Globalization, calling for now to Localize.

Similarly, Inward Looking, Closed Economy with Entry Barriers and too much Controls on Foreign Entry and Excessive Protection to Domestic Industry, Limits & Constraints Growth. The opposite of Economic Globalization—or Free-market Trade Across Borders—is Localization – a Protectionism, an economic policy that attempts to protect domestic businesses from foreign competition and labor markets, usually by imposing trade barriers like Tariffs and Restrictions.

Both Extremes of Globalization and Localization have Consequential Dangers to Damage & Jeopardies the Economies.

Rationally, Balancing both Globalization & Localization, proves beneficial for the Nations by taking Advantages of Globalization through Liberal and Free Trade with some Limitations & Cautions and at the same time taking due consideration of the Domestic Industry and Business by Strengthening them and Reasonably Protecting and Sheltering Native Industry from Foreign Cop is a Wise & Balanced Approach.

The term 'Glocal' combines the words **Global** and **Local**. Embracing **Glocal** means that you have a **Global Mindset, Reach & Access**, but you also **Accommodate & Promote** the Values, Cultures, Ideals, Interests and Needs of your **Local Businesses**.

Glocal – A Concept of Self-Reliance with Global Access

Glocal – A Concept of Self-Reliance with Local Strengths and Global Access, Trading Freedom and Liberal Integration.

Self-reliance is the **Ability and Independence to Do Things and Make Decisions by a Nation on its Own, without Coercive and Forcible Gravity from other Nations or any Organizations to Influence the Key Decisions.**

Three mutually reinforcing factors (**3 C's**) that determine a country's self-reliance:

Commitment: the degree to which a country's laws, policies, actions, and informal governance mechanisms — such as cultures and norms — support progress towards self-reliance; and

Capacity: how far a country has come in its ability to manage its own development journey across the dimensions of political, social, and economic development, including the ability to work across these sectors.

Collaboration : Effective Global Collaboration requires Defining and Aligning the Country's Vision & Goals, Addressing Trade Related Concerns, Adapting Globally Accepted Norms and Creating Partner Relationships, Engaging, Cooperating and Coordination on Mutually Beneficial Practices and Creating an Environment of Trust.

Glocal, Aligns the Local Aspirations and Development with Global Integration without Sacrificing Self-reliance, Self-sufficiency based on Local Strengths, Independence, Autonomy of Native Nations.

Glocal – Atmanirbhar Abhiyan

Glocal in Essence is aligned to “**Atmanirbhar Bharat Abhiyan**” - “**A Call to the Nation for Self - Reliance**” by our **Visionary Prime Minister, Shree Narendra Modi** Ji exhibiting his leadership ascent during Critical Crisis Situation of COVID. This Concept of “**Atmanirbhar**” (**Self-Reliance**) envisioned to be built on **Five Pillars – Those are the Key Areas to Strengthen the Nation:**

- Ø **Economy,**
- Ø **Infrastructure,**
- Ø **A system driven by Technology and forward-looking policies, Demography, and**
- Ø **Economic Demand.**

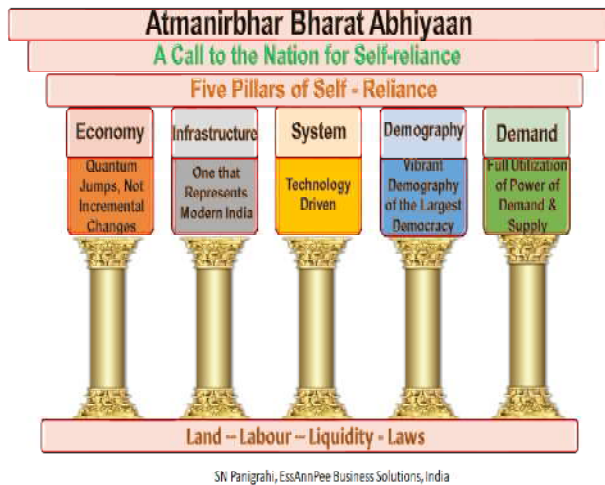
The Vision of Modinomics is

- v **Perform**
- v **Reform &**
- v **Transform**

Reflecting True Vision to Strengthen the Nation's Economy through Self-Reliance.

Atmanirbhar Bharat Abhiyan lays strong foundations to for raising our economic growth and long-term

sustainability through our Strengths focused on **Land, Labour, Liquidity and Laws**.



Vocal for Local ; Prime Minister Narendra Modi pitched for the use of products manufactured in the country, saying the novel coronavirus outbreak has taught us the **Importance of Local Manufacturing, Local Market and Local Supply Chain**.

"In times of crisis, this local has fulfilled our demand, this local has saved us. Local is not just the need, it is our responsibility also," he said in his address to the nation.

The prime minister said Indian has to become **"Vocal for their Local"**, not only to buy local products, but also to promote them proudly, in essence **"we must make the local as a mantra of our life"**.

"The global brands were sometimes also very local like this. But when people started using them, started promoting them, branding them, felt proud of them, they became global from local products," he said.

5 Things to Build a Self-reliant India : While delivering the Inaugural Address at CII Annual Session 2020, **Getting Growth Back**, through video conference, Prime Minister Narendra Modi on 2nd June'2020, listed five things that will help India mitigate the impact of the coronavirus pandemic and bring back the country to a high growth trajectory.

"To bring India on the path of rapid development, Five Things are very important to build a self-reliant India - Intent, Inclusion, Investment, Infrastructure and Innovation," the PM said



SN Panigrahi, EssAnnPee Business Solutions, India

Conclusion : Global Supply Chain advanced due to Globalization and Increasing Free Trade among Countries. Globalization undoubtedly has many Advantages & Benefits of Better Access and Integration of Supplies at Global Level.

However, Globalization & Global Supply Chains are more Prone to **Supply Chain Disruptions**. COVID Pandemic's impact on global trade and Supplies is so devastating 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**.

So, **Businesses have started looking for Offshore to Nearshore and Local Sourcing**.

Glocal – A Concept of Self-Reliance with Local Strengths and Global Access, Trading Freedom and Liberal Integration. That means Glocal is a Combination of Globalization & Localization - Thinking Global & Acting Local – Developing, Supporting Local Industry & Business.

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- Ø Article **"Value Insights into Supply Chain"** by **SN Panigrahi**, Published in August'2010 issue of MMR – IIMM
- Ø Article **"Supply Chain Resilience Management Can Mitigate Disastrous Consequences of Risks"** by **SN Panigrahi**, Published in April'2022 issue of MMR - IIMM

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ISO20400:2017(E)

INTEGRATING SUSTAINABILITY INTO THE PROCUREMENT PROCESS

ISO20400:2017(E) - Integrating sustainability into the procurement process is in continuation to **ISO20400:2017(E): Organizing the procurement function towards sustainability** published in September 2022 on page no. 20.

7.1 Building on the existing process : Clause 7 addresses the procurement process and how each process step can incorporate sustainable procurement practices. It is intended for individuals who are responsible for the actual procurement. Individuals who are responsible for procurement in associated functions might also find this clause of relevance. Sustainability should be integrated into existing procurement processes and the creation of a parallel process should be avoided.

Figure 4 illustrates a typical procurement process flow and is used as the structure of this clause.

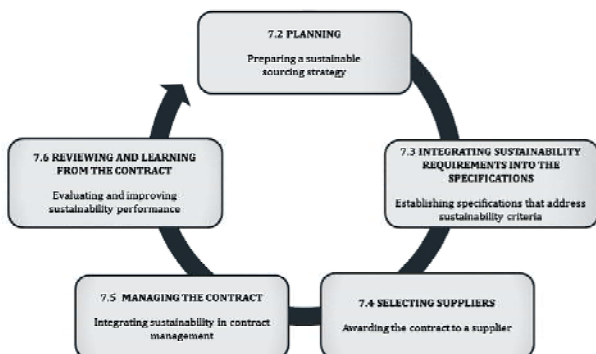


Figure 4 — Overview of Clause 7: Integrating sustainability into the procurement process

NOTE An essential element of the procurement process is gathering organizational information to fulfil a business need. As defined in Clause 3, a requirement means a broad provision that conveys criteria to be fulfilled by goods or services, whereas a specification means a document, usually technical, that prescribes requirements to be fulfilled by goods, processes or services.

7.2 Planning

7.2.1 Integrating key elements of sustainable procurement

Integrating sustainability into the sourcing strategy enables the organization to:

- address the significant sustainability risks (including opportunities) of goods or services, supplier practices and procurement activities, as described in Clause 5, and avoid focusing on details and minor issues;
- start a collaborative programme of work with stakeholders (e.g. internal clients, users, consumers, customers, suppliers beyond tier 1);
- define sustainability criteria that suppliers can respond to, while achieving value for money.

These elements should then be integrated in a sourcing strategy. This allows sustainability considerations to become part of strategic decision-making. Key elements of sustainable procurement planning are shown in Figure 5.



Figure 5 — Inputs into a sourcing strategy

7.2.2 Assessing sustainability risks (including opportunities)

Sustainability risks (including opportunities) can vary significantly from one type of goods or service to another and from one supplier to another. Relevant considerations include technical aspects, compliance culture, sourcing locations and supply chain structures, with particular attention paid to suppliers below tier 1.

An organization should therefore assess and prioritize the most relevant and significant sustainability risks (including opportunities) for each procurement activity. The directions set previously, e.g. the organization's

procurement policy and strategy, as well as priority setting, should be considered (see Clause 5 and 6.4).

This analysis leading to the sourcing strategy should not be done in isolation. Identifying the relevant sustainability issues requires a multidisciplinary approach in order to capture knowledge from:

- technical experts who have a deep knowledge of how goods or services are manufactured, processed, delivered, etc.;
- sustainability experts who can provide technical advice on matters such as labour and human rights, health and safety, environmental management and legal issues;
- those with knowledge of how goods or services will be used by the organization.

Together with an assessment of sustainability risk (including opportunity), various approaches can be used, such as the life cycle approach and LCC.

The life cycle approach consists of assessing sustainability impacts associated with all the stages of a product's life from cradle to grave, e.g. raw material extraction, materials processing, manufacture, distribution, use, repair and maintenance, and disposal or recycling.

7.2.3 Analysing the costs

It is important to consider all the costs that will be incurred during the lifetime of the goods or services. LCC is a method that could be used to analyse the costs. It consists of:

- a) total cost of ownership, including:
 - 1) purchase price and all associated costs (delivery, installation, insurance, etc.);
 - 2) operating costs, including energy, fuel and water use, spares, and maintenance;
 - 3) end-of-life costs, e.g. decommissioning or disposal;
- b) positive or negative externalities which can be monetized, including:
 - 1) for the organization: costs and benefits of risks (including opportunities), i.e. the evaluation of costs associated with risk (including opportunity) mitigation and benefit realization;
 - 2) for society: the cost of environmental externalities and the cost of social externalities (e.g. job creation or job losses).

When assessing the costs using an LCC approach, the organization should indicate in the procurement documents the data to be provided by the tenderers and the method to be used to determine the life cycle costs on the basis of the data.

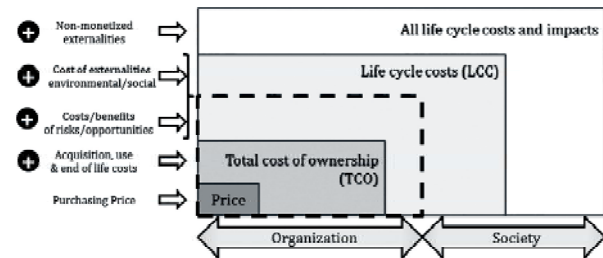


Figure 6 provides an overview of LCC.

Figure 6 — Overview of LCC

7.2.4 Analysing organizational needs

When analysing the organizational need for specific goods or services, the organization should consider what alternative options might exist to deliver the same outcome in a better way, e.g.

- eliminating the demand by reviewing the need;
- reducing the frequency of use/consumption;
- identifying alternative methods of fulfilling demand, such as outsourcing services or leasing rather than owning;
- aggregating and/or consolidating the demand;
- sharing use between divisions or organizations;
- encouraging recycling, repairing, reusing or repurposing of older goods;
- determining whether outsourcing is required and how to extend the scope of responsibility for environmental and labour practices throughout supply chains;
- using recycled/renewable materials.

This illustrates the concept of a circular economy.

The organization should consult key internal stakeholders to assess the feasibility of potential sustainable solutions and adapt recommendations, and engage them to support the changes required. Where external stakeholders participate in determining the demand (e.g. government organizations), it might be necessary to engage them upfront in examining options.

7.2.5 Analysing the market

The objective is to gain a thorough understanding of the existing and future capability of the supply market to support the organization's sustainability needs, while providing the same or an improved level of price, functionality and quality of service. Market analysis can enable the organization to understand whether the sustainability criteria reduce or increase the level of competition and/or the organization's buying power.

An organization can be a powerful enabler of economic inclusion for all types of supplier. If local suppliers, SMOs and disadvantaged populations and communities (e.g. suppliers owned and/or employing people with disabilities, or indigenous communities) are identified

as significant in the prioritization, the organization should make sure that the market research focuses particularly on these groups.

Suppliers can often be more progressive than their clients in terms of creativity and innovation. It is important to engage with a diverse range of suppliers early on in the process to determine whether business requirements could be met or exceeded by:

- new technologies;
- new goods or services;
- new suppliers;
- advances in sustainable business practices;
- new business models;
- innovative buyer/supplier relationships;
- use of appropriate sustainability standards and labels.

Consider the position of the purchasing organization within the market. The matrix in Figure 7 can be used as a guide.

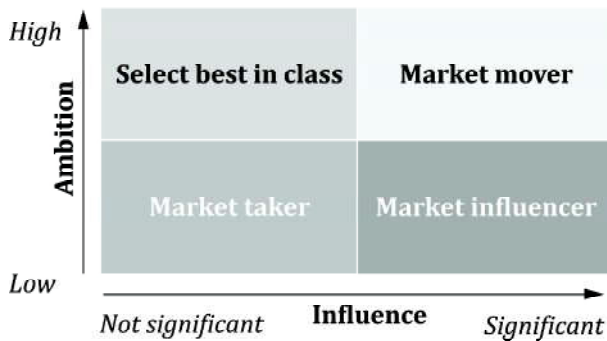


Figure 7 — Market engagement matrix

This matrix aims to help individuals responsible for the actual procurement to understand what sustainability outcomes might be achieved from the supply market, depending on the purchasing organization's market influence and sustainability ambition.

- **Market mover:** In areas where significant influence exists combined with high ambition, it might be possible to significantly influence suppliers or even move markets to a higher level of sustainable behaviour and set a new level of best practice.
- **Best in class:** Where sustainability ambition is high but influence over the supply market is low, it is likely selecting the current level of best practice will achieve the most sustainable outcome.
- **Market influencer:** Where ambition is low and influence is significant, there is likely to be little appetite to drive the market to a new level; however, this influence can be used to encourage the supply chains to improve sustainability practices and outcomes.
- **Market taker:** Where influence is low and ambition is also low, the appropriate strategy would be to adopt the standard sustainability practice offered by the market.

Influence should not just be considered in financial terms. Some suppliers could be attracted to the idea of developing more sustainable goods or services for a small customer, with a view to creating an additional competitive advantage with larger ones. Influence can also be improved through collaboration with other purchasing organizations, with due consideration given to ethical issues and competition law. Market research should not be limited to external sources: an organization's own internal resources could provide valuable insights on sustainability criteria and opportunities.

7.2.6 Completing the sourcing strategy

The sourcing strategy describes how to deliver the best outcome for the procurement project. It can be as short as one page for a simple procurement project (e.g. a briefing note) or considerably longer for a complex procurement project.

The sourcing strategy should include:

- key findings about sustainability risks (including opportunities), needs and the supply market;
- the actions required to manage key sustainability risks (including opportunities);
- the recommended demand-related approach (e.g. elimination, reduction, reuse, recycling);
- how the sourcing approach delivers sustainability objectives;
- how sustainability requirements are incorporated into the specification, including any go/no-go criteria at the prequalification or tender stage: care should be taken to ensure all suppliers are given full and fair opportunity to compete;
- how sustainability aspects are incorporated into the draft contract or terms and conditions;
- the weight given to sustainability in the evaluation criteria, with careful consideration given to finding the best balance with other criteria, such as price or quality;
- the expected sustainability benefits, including savings over the life cycle;
- the impacts of the sustainability approach on the project plan and budget.

Some goods, equipment and assets require disposal strategies to be developed for the end of their useful life. Disposal decisions, however, should not be taken in isolation. While disposal is viewed as the final stage in the management life cycle of goods, equipment and assets, it is common for disposal action to trigger the acquisition of a replacement asset. Disposal strategies should be considered in the sourcing approach and evaluation criteria, where appropriate. Such strategies should focus on optimizing the social, environmental and economic impacts of functionally inadequate or under-utilized assets, as well as on their safe decommissioning, transport and warehousing.

The decisions made at this stage influence the whole procurement process. Decisions should be supported and agreed by key stakeholders, and should ultimately be documented. Many organizations use a gateway review at this stage with sign-off by senior stakeholders before progressing to the next stage.

7.3 Integrating sustainability requirements into the specifications

7.3.1 Defining sustainable procurement criteria

Once a decision is taken on the sourcing strategy, the sustainability criteria should be defined and documented. Sometimes there is only one document (the specification), but in other cases there are different documents addressing the requirements, in accordance with the organization's culture (e.g. a draft contract, brief, scope of work or the establishment of prequalification criteria). This decision should include consideration of the impacts of changes on contractual arrangements, e.g. the loss of a large proportion of business or the lack of capacity to cope with expanded requirements.

Integrating sustainability aspects into these documents is the most effective means of ensuring that sustainability risks (including opportunities) are incorporated into the procurement decision-making. This should be done in coordination with key internal stakeholders, in order to reflect practical and technical considerations.

Some of these requirements apply directly to the goods or services being purchased. Some might apply to the production and process methods used to deliver goods or services and others to the supplier organization in itself.

When including sustainability criteria in the procurement process, the organization should take care that the sustainability criteria:

- reflect the priorities defined in the sourcing strategy, e.g. by including key sustainability requirements in the minimum sustainability criteria;
- are objective and verifiable;
- are clearly defined without any risk of bias or collusion;
- are transparently and effectively communicated to potential suppliers;
- allow for fair competition and, in doing so, ensure that particular attention is paid to SMOs and the development of their capacity to respond to such criteria;
- identify how far down the supply chains it is necessary to go for adequate impact assessment.

Where appropriate, the draft contract should include clauses that enable the organization to increase its control over what happens in the supply chains. Examples of clauses might include:

- provision to assess/audit all parties involved in the supply chains;
- obligations on the supplier to inform the organization of any significant impacts in the supply chains;
- minimum standards to be met by suppliers at lower tiers of the supply chains;
- rights to terminate the contract for breaches of sustainability obligations.

7.3.2 Choosing the types of requirements

Different types of requirements can be used:

- physical or descriptive requirements: specify a characteristic of goods or services;
EXAMPLE 1 Recycled or renewable content, mercury-free, or the way in which the product is manufactured or delivered (i.e. the process), e.g. organic or sustainably managed timber and fisheries.
- performance requirements: define the performance standards to be met by the goods or services, including definition of the way goods or services need to be delivered in order to optimize social and environmental impacts related to future performance;
EXAMPLE 2 Standards of care and number of patients for a social care service, delivery time, waste, and carbon emissions reduction.
- functional requirements: define the proposed function to be fulfilled by the goods or services required.
EXAMPLE 3 The strength and durability of concrete to be supplied, or energy/fuel efficiency.

Generally, a combination of performance and functional requirements is preferred as they enable suppliers to propose the most efficient technical solution for the required performance or function, leading to potential sustainability benefits such as better energy performance, reduction of waste, better safety for users, universal design, disposal and end-of-life management. When using technical requirements, the organization should take care not to specify particular brands unless this is unavoidable.

7.3.3 Applying minimum and optional requirements

Requirements can be:

- minimum, when they establish minimum levels of acceptable performance, actively excluding undesirable features;
- optional, when they define preferred sustainability solutions: in this case, they should be related to an evaluation criterion that is used to reward performance exceeding the minimum standards, and possibly to a KPI that should be managed during the contract.

In addition to these two main options, an organization can use additional techniques such as variants in order to encourage better alternative solutions.

The analysis of the market carried out earlier in the procurement process informs the decision about what should be minimum and optional. For instance, the degree to which suppliers can meet the organization's sustainable criteria might not always be known when writing the tender, or the market analysis might have revealed a significant gap between suppliers' sustainability performance. In that case, the risk of restraining competition and excluding capable suppliers should be avoided, unless the requirement is an absolute necessity for the organization.

If a supplier with lesser sustainability performance is selected, agreements should be made on how the supplier could progress to increased sustainability performance in the future. This should be monitored in the contract phase.

7.3.4 Finding information to establish the requirements

In the market, there are marks, labels or certifications to identify goods or services that conform to specific sustainability criteria. These criteria are included in technical standards that might be public or private, national, regional or international.

It is useful to consider such standards as valuable sources of information when establishing procurement requirements. The criteria in these standards are established throughout one or multiple life cycle stage(s) of goods or services, and pertain to single or multiple sustainability aspects.

The organization can decide which sustainability impact areas are most relevant, referencing full or partial criteria contained within these standards when establishing requirements. Where relevant, suppliers and industry associations can be consulted.

Using this approach, any goods or services that meet these requirements can be purchased, even if they have not formally been awarded a sustainability mark, label or certification, taking into account the conformity assessment guidance provided in 7.3.5.

An alternative approach is to specify in the procurement requirements that the goods or services should have the nominated certifications, labels or marks (public procurement policy may have restrictions to this approach in some countries). Due consideration should be given to the number of eligible suppliers in order not to limit competition inadvertently, as the availability of such marks and labels differs by industry.

7.3.5 Evaluating that sustainability requirements are met

Each sustainability requirement should be verifiable via an evaluation procedure that is outlined by the

organization in the tender documents. When choosing an appropriate evaluation procedure, organizations should take into account the following factors:

- the importance of the issue/requirement (including the sustainability issues) to the organization;
- the risks of non-conformity with the sustainability criteria;
- the cost of the evaluation procedure;
- the availability of technical infrastructure to support the evaluation procedure;
- the competence of the evaluator;
- the credibility of any external body or organization that is involved.

Evaluation procedures involve activities such as the review of documentation, testing, inspections, audits, certification, management systems, assessment, sustainability claims, labels and declarations or a combination of them.

These activities can be carried out by the supplier or its representative (first-party), the purchasing organization or an external body on its behalf (second-party) or an independent external body or organization (third-party). When defining the evaluation procedure for each requirement, the organization should establish what activities should be carried out and by whom.

ISO standards that address conformity assessment should be used where relevant when establishing evaluation procedures. When choosing an evaluation procedure, the organization should balance cost in connection with the desired level of assurance. Cost can differ between evaluation procedures. The organization should also consider who bears the cost, taking into account the context of the supplier (e.g. size, location).

The organization should consider the level of assurance offered by each type of evaluation procedure. In general terms, certification schemes typically engender higher levels of confidence with limited effort for the purchasing organization.

The organization should also determine whether the technical infrastructure involved in the evaluation procedure is competent and complies with relevant applicable standards and guides.

When an external body is used, the organization should consider whether it is operating in accordance with relevant standards (e.g. ISO/IEC 17020, ISO/IEC 17021, ISO/IEC 17025, ISO/IEC 17024 and ISO/IEC 17065.)

Accreditation is a means of assessing, in the public interest, the technical competence and integrity of organizations offering evaluation services. Organizations might wish to consider the additional assurance that might be gained by using an accredited evaluation body.

Specifically when dealing with evaluation procedures that incorporate environmental labels, it could be helpful to consider three common types of environmental labelling:

- ISO 14024 Type I environmental labelling: this involves third-party certification and awarding of a label (e.g. those recognized by the Global Ecolabelling Network), following product assessment and demonstration of conformance to agreed-upon environmental performance leadership criteria which are based on life cycle considerations;
- ISO 14021 Type II environmental labelling: this involves supplier first-party environmental claims of conformity, including statements, symbols and graphics, regarding products;
- ISO 14025 Type III environmental labelling: this involves third-party validation of an EPD (environmental product declaration), which is quantified life cycle environmental information of a product to enable comparisons to other products intended to fulfil the same function.

Other labels have a verification and certification process focusing on single issues (e.g. energy consumption, sustainable forestry). Even if the overall environmental relevance of ecolabels is more significant because these consider the whole life cycle of products, reliable and third-party single-issue labels can be effective in targeting specific problems.

The evaluation procedure can be conducted as a part of prequalification or as a step in the tender process. After the contract has been awarded, additional ongoing evaluation should be conducted in accordance with the plan that has been established within the tender. This ongoing evaluation can be simplified and consists of activities that could be different from those established within the tender, so long as they are consistent, take into account the history of the supply, and focus on the most critically relevant issues.

7.4 Selecting suppliers

7.4.1 Assessing the capacity of suppliers

The organization should assess the capacity of the supplier to contribute to the organization's requirements and expectations on sustainability through the supply of goods or services.

Supplier selection often comprises prequalification and tendering. The main difference between the prequalification and tendering stages are the following:

- prequalification usually focuses on overall capabilities of the supplier to deliver expected outcomes, including sustainability ones;
- tendering usually focuses on the capacity and commitment of the supplier to deliver detailed and specific requirements, including those related to sustainability, for goods or services.

When conducting supplier selection, the organization should ensure that all public policies (e.g. public procurement policies) are respected and that open and fair competition is promoted between potential suppliers. In doing so, particular attention should be paid to:

- ethics, prevention of corruption, conflicts of interest, respect of property, intellectual property infringements and internal controls;
- the transparency and accountability of the whole selection process;
- qualifying or disqualifying the suppliers;
- inclusion of all organizations of any size, status or positioning with the capacity to fulfil the requirement.

7.4.2 Prequalifying suppliers

The purpose of prequalification is to gather relevant information about the capability of suppliers to participate in tenders and, in some cases, to evaluate tenders against go/no-go criteria. The requirements for prequalification should be clearly established and should take into account relevant sustainability issues with due consideration for the sustainability risks (including opportunities) that are related to the supplier's organization. Many industry specific standards, codes of supplier conduct and management systems are used in prequalification, e.g. compliance with the standards of the International Labour Organization for working conditions and human rights could be a mandatory criterion. An organization should also decide whether to encourage suppliers to sign a code of conduct or charter and/or join a sustainability initiative and, in making this decision, should consider the implications for the supplier of doing so.

At the prequalification stage, it might be sufficient to request evidence of respect for human rights, ethical trading, labour and environmental policies by means of suppliers' declarations of conformity (self-claims) on those subjects. However, as the process progresses and potential suppliers are further assessed through the tender process, audits, site visits and other means of collecting evidence of conformity (second-party or third-party assessments) might be used to provide further assurance. The choice of the most appropriate conformity assessment method should be the result of a risk assessment of the consequences of a failure to fully conform to the requirements.

Some prequalification criteria might be optional and can be used to inform a weighted evaluation of further shortlisted suppliers that comply with all the mandatory criteria.

EXAMPLE A supplier with a proven track record in reducing carbon emissions could be selected ahead of a supplier with less experience in this area.

The example in Figure 8 could be considered as a go/

no-go condition, with “Good” as a minimum requirement, or as a way of shortlisting if there are no minimum mandatory criteria.

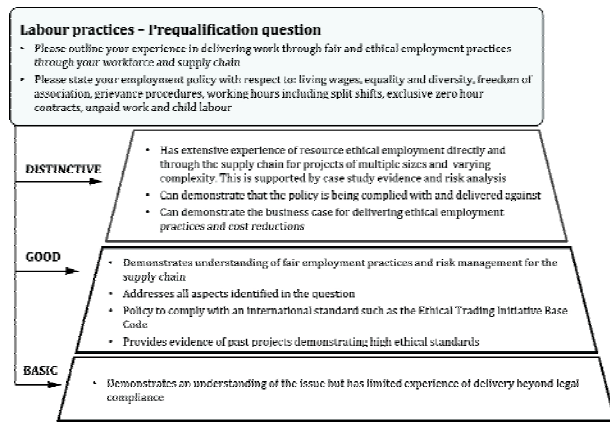


Figure 8 — Example for prequalification question and criteria

If suppliers have been contacted in the prequalification process and are deselected, it is good practice to formally notify them and provide debriefs. Suppliers should be made aware if and how their credentials fall short of the requirement (including those related to the sustainability issues), which in turn sends a clear signal to the market regarding the importance of sustainable business practices.

7.4.3 Managing tenders

Suppliers might be invited to attend a pre-tender briefing to outline the bid process and ensure ongoing communication, depending on the scale, market and complexity of the purchase. This is a further opportunity to confirm that suppliers fully understand the commercial and sustainability expectations and to encourage joint proposals from firms with complementary sustainability features (e.g. a large organization can form a joint venture with a small, sustainability-oriented organization).

Transparency, accountability and ethics are keys to the tendering stage: all bid evaluation criteria, evaluation methodology and benefits assessment should be agreed in advance of tender issue and communicated clearly to suppliers. The organization should ensure that the suppliers fully comprehend the importance of all aspects of the proposal, including the sustainable requirements.

Criteria can be assessed in several ways, including:

- setting minimum requirements or performance standards (go/no-go criteria);
- weighting criteria;
- methods of cost calculation;
- monetizing certain impacts, such as energy consumption and waste.

The supplier with the best performance on the sustainability issues might not always win a tender if it is not competitive in other areas. In this case, it could be appropriate to award a contract conditional upon achieving a minimum standard over a specified timeframe. In the example in Figure 9, the contract could be awarded conditional upon the supplier achieving “Good” standard after a period of time.

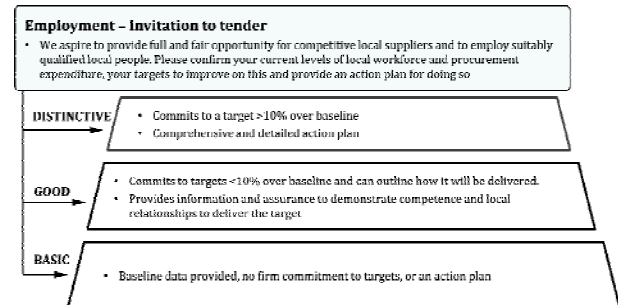


Figure 9 — Example of a tender question and evaluation criteria

Low prices can be achieved by suppliers with good performance. However, suppliers with unsustainable practices might be able to offer abnormally low prices that could reflect a shortcoming on social and environmental aspects, compared with suppliers with better conditions. Unless robust prequalification and tender processes and criteria are in place to ensure good minimum standards before the supplier is appointed, the organization could be undermining its own sustainability policies, exposing itself to a wide range of risks, and giving a signal to the market that it undervalues sustainability against other issues.

7.4.4 Awarding the contract

Four common methods can be used to promote sustainable outcomes at the evaluation stage.

- Rewarding superior standards and performance:** This might include recognition of the ability of goods or services to enhance the sustainability of the organization's own goods or services, as outlined in 7.3.2.
- Qualitative judgment can be used in some specific contexts.** Suppliers, especially in service industries, could be requested to summarize their experience and methods in relation to sustainability criteria within their tender response. This enables organizations to assess their approach to managing major sustainability risks (including opportunities) identified during the planning stage. It is often advisable to conduct face-to-face interviews with key staff and to make site visits to places where similar services take place to ensure qualitative judgments are supported by the best evidence possible.

- c) Fit-for-purpose assessments that enable identification and evaluation of goods or services that might not be sufficiently robust, leading to higher repair and replacement costs: Other proposals might be over-engineered, providing unwanted functionality or service at added expense. Neither extreme provides a sustainable solution and this should be reflected in the evaluation. Environmental labelling criteria (see 7.3.4 and 7.3.5), the characteristics stated in environmental product declarations and other product standards can help to evaluate the credentials of goods, including the relevant sustainability issues. Alternatively, evidence based on trials or other client references help to evaluate this important aspect.
- d) Methods of cost calculation to ensure that true value for money is achieved, resulting in the selection of the best supplier over the life of the contract: If correctly applied, this technique helps to calculate use and end-of-life costs such as energy consumption, early replacement or repair of less durable goods and final disposal. If possible, future expected costs (e.g. anticipated environmental and social taxes) should be factored in.

Private sector organizations and some public bodies might be able to negotiate following tender evaluation. This stage represents a risk of reduced sustainability commitments from the supplier(s), especially if there is focus on cost only. This stage can also provide an opportunity to improve supplier engagement.

Any outstanding sustainability requirements should be included in the preparation for a negotiation meeting and/or a negotiation strategy and tabled during the negotiation.

Key outcomes of the negotiation can include the following:

- requirements related to sustainability issues have been secured and reporting has been agreed (e.g. monitoring and actions, KPIs);
- an action plan to manage sustainability risks (including opportunities) identified in the earlier prequalification or tender evaluation stage has been agreed;
- proactive influence on the supplier's future sustainability agenda has been achieved.

Where possible, sustainability commitments should be written into the contract to ensure that the supplier is contractually bound to deliver them or improve their performance over time. If it is not possible to negotiate contractual commitments, a more informal and flexible approach might be required to persuade suppliers to embrace sustainability initiatives. These initiatives are usually captured in a separate supplier improvement plan or a memorandum of understanding. Examples of initiatives include commitments to switch to (or

increase the use of) sustainably managed timber, reduce or eliminate the use of a hazardous chemicals, increase the use of local SMOs or to ensure improved working conditions further down the supply chain.

Upon conclusion of the negotiation, the supplier should be formally awarded the contract, which should be fully approved by the key stakeholders and delegated authorities (organizations might have a formal gateway review at this point). The relevant internal stakeholders should be informed of the new arrangements.

Unsuccessful suppliers should be notified and fully debriefed. Suppliers should be made aware if and how their sustainability credentials fall short of the requirement, as this is an important organizational contribution to the suppliers' improvement. This in turn reinforces the importance of sustainable business practices within the supply market.

7.5 Managing the contract

7.5.1 Managing the supplier relationship

Sustainability commitments of an organization should be reflected in the quality of the relationship with its suppliers. Achieving sustainability outcomes often requires developing a long-term vision. This vision has a better chance of success if it is shared by a supplier that considers the purchasing organization to be a preferred customer.

The quality of the supplier relationship can be enhanced through a combination of practices. These include:

- inclusion of mutual obligations between suppliers and customers in the contracts connecting parties;
- balanced clauses, fair conditions (e.g. guarantees, deadlines), KPIs and liquidated damages or penalties where permitted;
- robust procedures (e.g. base-contracts, protection of intellectual property) and conditions (e.g. prompt payments) strengthening supply chain stakeholders;
- prompt issue of orders whenever the client organization and supplier agree to begin the work to avoid hidden costs and to reduce risk for both parties when ordering;
- controlled and improved payment performance, with respect to contractual terms: even when suppliers are responsible for delays, the monitoring of payment performance is key to maintain a balanced and sustainable relationship, so this should be done on a regular basis against target or/and benchmarking data;
- avoidance of conflicts through dialogue and efficiency of dispute resolution (e.g. by appointing a mediator);
- focused attention paid to the different categories of suppliers (e.g. strategic, SMOs, vulnerable suppliers);

-
- a bilateral relationship based on trust, transparency and collaborative forward planning and, more broadly, the use of guidelines and best practices existing within their sector.

7.5.2 Implementing the contract

There is a period of transition at the start of any new contractual arrangement and frequently the influence and involvement of stakeholders change as the contract becomes operational. From a sustainable operational perspective, it is critical that awareness and focus on sustainable elements and associated performance targets are communicated and understood by relevant internal stakeholders to ensure that any sustainability commitments made in the contract are fully implemented.

The supplier should also fully support the implementation of sustainability practices, right from the start of the contract. It is the role of the contract manager to make sure that sustainability remains firmly on the supplier's agenda.

7.5.3 Using a contract management plan

A contract management plan that reflects the organization's sustainability objectives and related KPIs should be established.

The contract manager and supplier should revisit any sustainability risk (including opportunity) analysis completed by the organization throughout the planning and selection stages. Corresponding action plans should be revisited or developed to ensure supplier buy-in, alignment and continued focus on sustainability key risks (including opportunities). These should be referred to in the contract management plans and, where appropriate, incorporated into supplier development plans.

In some cases, there might be competing priorities and improving sustainability practices might not be in the supplier's short-term financial interest.

EXAMPLE Waste contractors that are paid by the tonne might be reluctant to embrace waste reduction initiatives, or IT equipment suppliers might not be supportive of customer attempts to increase product lifespan through product upgrade as opposed to replacement.

In such instances, a combination of incentives and remedies can be adopted to realign profitability with sustainability, e.g.

- supplier incentives could be paid for achieving performance above expected or agreed targets;
- fixed price contracts could be agreed (in this case reducing waste or improving efficiency would improve a supplier's profit margins);
- gain share agreements could be put in place where the customer and the supplier split any gains from sustainability improvements.

7.5.4 Managing performance and relationships

Ongoing performance monitoring is essential for the duration of the contract to ensure that the supplier continues to deliver in accordance with the requirements, contract terms and/or separate action plans. Two-way evaluations are necessary for effective performance management and to promote a good relationship between organizations and suppliers. Good practice requires:

- the organization to inform suppliers how they are being evaluated (e.g. criteria, KPIs, audit terms);
- the suppliers to have the ability to provide feedback and openly communicate their perception of the organization.

Many organizations adopt methodologies where sustainability criteria can be monitored alongside service, quality, delivery, cost and technical requirements. Balanced scorecard methodologies are an example of such an approach. If any individual results or combined results show a negative trend or fall below an agreed threshold, the supplier should be required to take corrective action.

Review meetings should be set at agreed intervals and should be held face-to-face for key suppliers. These meetings provide an opportunity for both parties to communicate, share concerns, promote understanding and foster a good business relationship. Organizations should consistently attempt to harness suppliers' sustainability expertise to maintain competitive advantage, and a constructive review process fosters this.

It is important to review risks of dependency from both sides, between the organization and its suppliers. Every situation needs to be closely analysed (e.g. a supplier with a specific competence or a newly created firm) and appropriate actions taken (e.g. accept, prevent, limit or withdraw) in order to reduce excessive dependency and prevent adverse impacts for the other party.

It is good practice for organizations to carry out periodic audits of suppliers throughout the life of the contract, especially for important and complex contracts, to verify that sustainability claims and work practices meet stated requirements. Audits are useful for focusing on particular issues, e.g. sustainability requirements, and they create an awareness of the expected standards of performance. However, audits alone cannot ensure full compliance with standards. Other techniques for monitoring compliance with sustainability requirements should also be employed.

Suppliers with outstanding performance regarding sustainability could be recognized through facilitating their access to business development opportunities, and possibly awards or similar initiatives, in order to reward and promote efforts towards continual improvement. This also provides an example of good practice for other suppliers.

The sustainable procurement policy can promote the use of negotiation, mediation, conciliation or arbitration to solve any dispute between the organization and a supplier. For that purpose, a dispute resolution process should be developed that outlines steps for resolution and assigns responsibilities for its facilitation.

7.5.5 Encouraging supplier-customer joint initiatives

Organizations should champion initiatives to improve sustainability and this frequently involves suppliers and the purchasing organization in joint approaches. Supply chains can be long and complex and efforts to improve upstream sustainable practices require the proactive support of key tier 1 suppliers.

EXAMPLE Efforts by purchasing organizations to improve working conditions or gain assurance of integrity of source materials or authenticity of goods can be greatly facilitated by proactive support from these suppliers.

Where appropriate, joint initiatives should be put in place to improve the sustainability issues identified when priorities were set. In some cases, the market might not be capable of delivering new or challenging sustainability standards. In this case, supply chain development programmes could be necessary to improve competence and capacity (see 6.3.2).

Examples of joint initiatives are sector initiatives to deal with labour conditions in their supply chains, finding and developing more sustainable alternatives, and sharing of audit data.

7.5.6 Managing supplier failure

In some cases, it might be necessary to exit a relationship with a supplier where the supplier has failed to meet the agreed requirements and conditions. It is important to treat failure to meet sustainability requirements in the same way as any other failure by a supplier.

In case of sustainability failures of the supplier, organizations could consider the following actions:

- offering capacity-building support to the supplier to help it address the problems;
- working collaboratively with other organizations that have relationships with the same supplier to incentivize improvements;
- working with other organizations on a broader regional or sectorial basis to incentivize improvements;
- working with local or central government to the same ends.

Exiting the relationship should be a last resort. This should only occur after the organization has made the effort to support the supplier to meet agreed requirements, but where the supplier has made little or no effort to improve or the supplier has proved to be incapable of improvement, or where improvement

is not feasible.

The degree of failure should be determined on the basis of how the supplier is engaged by the organization, the contract performance commitments initially agreed to, and the progress measurements made, etc. To continue to source from such a supplier might indicate to the supply market that the organization is not serious about its sustainability commitments across its supply chains.

7.5.7 Managing disposal and end of life

At this point, disposal options should be reviewed and assessed with the aim of managing environmental impacts, maximizing recycling and reuse and determining all opportunities to minimize landfill use and pollution. Unethical disposal can have significant remediation costs and might damage the organization's reputation. More generally, it is appropriate at this stage to refer to the concept of the LCC for consideration of remediation costs.

7.6 Reviewing and learning from the contract

The buying organization should conduct regular reviews of the contract throughout its duration, as well as at the completion of the contract. This is vital to ensuring that lessons learned during the life of the contract can be shared and continual improvements can take place to achieve better sustainability performance.

Once the contract is completed, it is helpful to capture these learnings in a debrief document to feed into the next procurement and sourcing strategy. This document should contain contract review information including the following:

- details about the sustainability risks (including opportunities) that occurred and how these were managed;
- details about the achievement of sustainability objectives and targets contained in the contract;
- an overview of sustainability performance;
- an analysis of key success criteria;
- the key lessons for future contracts.

Each new sourcing strategy should draw on lessons from the previous one. This enables new thinking to be incorporated into the process alongside a review of priorities and objectives to promote continual improvement and drive more sustainable outcomes. Lessons learned from individual contract review can be summarized periodically in order to review the performance of the sustainable procurement strategy.

It is best practice to publish lessons learned in detail and in such a way that other organizations can learn from them.

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WAREHOUSE MANAGEMENT

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Introduction- Storage or warehousing provides the place utility as part of logistics for any business and along with Transportation is a critical component of customer service standards.

Warehouse and transportation is part of integrated supply chain.

- Part of firm's logistics system that stores products at and between point of origin and point of consumption.
- Many consider warehouses 'a necessary evil' that add costs to the distribution process.
- Warehousing provides time and place utility for raw materials, industrial goods, and finished products, allowing firms to use customer service as a dynamic value-adding competitive tool.
- Warehousing plays a vital role to group products into assortments desired by customers.

Some of the pictures of showing inside pictures of a typical Warehouse are given below:-



Reasons for Warehousing :

1. To support the company's customer policy.
2. To maintain a source of supply without interruptions.
3. To achieve transportation economies.
4. To support changing market conditions and sudden changes in demand.
5. To support any JIT programs.
6. To provide customers with the right mix of products at all times and all locations.
7. To ensure least logistics cost for a desired level of customer service.
8. Protection against contingencies

Benefits of warehousing:-

- 1 Consolidation.

- 2 Break bulk warehouse.
- 3 Processing / Postponement.
- 4 Stockpiling.
- 5 Service benefits.

Stores are generally obtained from the following sources in Warehouse:

1. Completion of the procurement process
2. Completion of the production process
3. Goods returned to stores inventory

Warehouse Operating Principles:-

There are three Principles based on which warehouse is being operated:

1) Design criteria:

- a) Number of stories in the facility,
- b) Height utilization,
- c) Product flow

2) Handling technology

- a) Movement continuity,
- b) Movement scale economies.
- 3) Storage plan

Types of warehouses:-

It includes:

- 1) Private warehouses,
- 2) Public warehouses,
- 3) Contract warehouses

Warehousing Strategy...

An integrated warehouse strategy focuses on two questions-

- 1) The **1st** concerns how many warehouses should be employed.
- 2) The **2nd** question concerns which warehouse types should be used to meet market requirements

Many firms utilize a combination of private, public, and contract facilities.

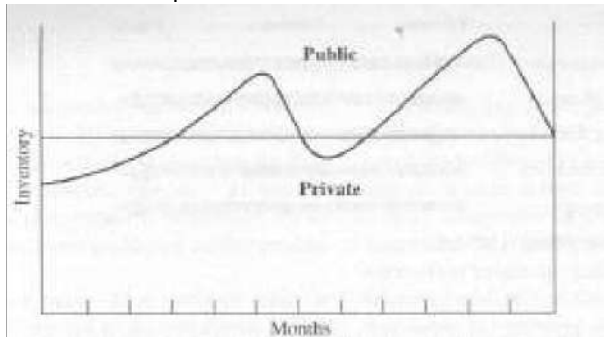
- A private or contract facility may be used to cover basic yearround requirements, while public facilities are used to handle peak seasons.
- In other situations, central warehouses may be private, while market area or field warehouses are public facilities.

Full warehouse utilization throughout a year is a

remote possibility.

- ✗ As a planning rule, a warehouse designed for full-capacity utilization will in fact be fully utilized between 75 to 85 % of the time.
- ✗ Thus from 15 to 25 % of the time, the space needed to meet peak requirements is not utilized.
- ✗ In such situations, it may be more efficient to build private facilities to cover the 75% requirement and use public facilities to accommodate peak demand.

It may be more efficient to build private facilities to cover the 75 % requirement and use public facilities to accommodate peak demand



Other qualitative factors that should be considered include:

- 1) **Presence synergies:** Inventory located nearby in a building that is clearly affiliated with the enterprise.
- 2) **Industry synergies:** Refer to the operating benefits of collocating with other firms serving the same industry.
- 3) **Operating flexibility:** Refers to the ability to adjust internal policies and procedures to meet product and customer needs.
- 4) **Location flexibility:** Refers to the ability to quickly adjust warehouse location and number in accordance with seasonal or permanent demand changes.
- 5) **Scale economies:** Refer to the ability to reduce material-handling and storage through application of advanced technologies

The Warehouse location strategies:-

- 1) **Market positioned:**
 - a) Order Cycle time
 - b) Transportation cost
 - c) Sensitivity of the product
 - d) Order sizes
- 2) **Product positioned:**
 - a) Perishability of the raw materials
 - b) Number of products in the product mix
 - c) Assortments ordered by the customers from the product mix
 - d) Transportation consolidation rates
- 3) **Intermediately positioned:**

WAREHOUSE LAYOUT

A warehouse layout basically takes care of aspects such as where should products/ materials are located in the warehouse. A good warehouse layout can

- Increase output
- Improve Product flow
- Reduce costs
- Improve service customers
- Provide better employee working conditions

The optimal layout & design will vary with the

- Type of product being stored
- The company's financial resources
- Competitive environment
- Needs of customers
- Cost trade-offs between labor, equipment, space and information

Warehouse Site Selection

- The site selection revolves around two major factors: Service and Cost Product availability can be greatly enhanced by locating the warehouse near the market.

The other factors that have a bearing on site selection are:

- Infrastructure
- Market
- Access to the warehouse
- Primary Transportation Cost
- Availability of warehousing space
- Product Characteristics
- Regulations
- Local Levies

Approach for Site selection of warehouse

Macro Approaches

- **Market Positioned**— locating the warehouse nearest to the customer with a view to Maximize customer service levels
- **Production Positioned**— locating the warehouse closer to the sources of supply or

Production facilities.

- **Intermediately Positioned**— locating the warehouse between the final customer and The producer. This decision will depend on the service level to be given to a customer and the costs involved

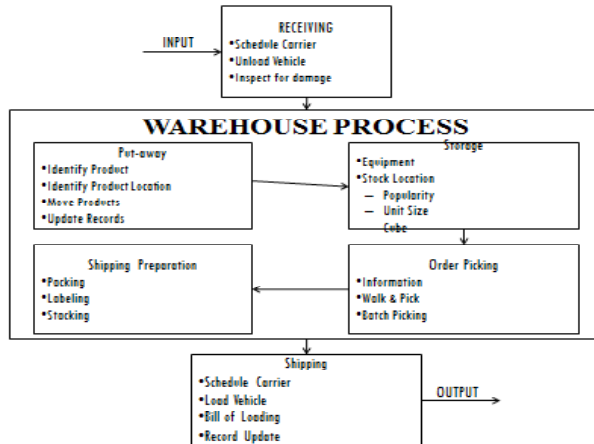
Micro Approach — a Firm may have to consider the Following Points

- Quality & variety of transportation carriers serving the site
- Quality & Quantity of labor available
- Labor rates
- Cost & quality of industrial land
- Potential for expansion
- Tax structure
- Cost of construction

- Cost & availability of utilities
- Tax Incentives
- Nature of the local community

Warehouse Process

The Warehouse process can be understood with the below figure-



Costing

- Warehousing costs are created by warehousing & storage activities and by the plant and
- Warehouse site selection process. In fact, four types of costs have a significant bearing on the decision taken on the number of warehousing facilities.
- These are: Inventory Costs, Warehousing Costs, Transportation Costs and the Cost of Lost Sales.

Inventory Costs

- Inventory costs increase with the no. of facilities as there is a tendency to keep stock of the items at all the stock keeping facilities.

Warehousing Costs

- These increase because more warehouses mean more space to be owned, leased or rented.

Transportation Costs

- These may decline initially as the no. of warehouses goes up, but after some time may start increasing depending on the quantum of inbound and outbound transportation costs.

Cost of Lost Sales

- These costs are extremely important to a company and are most difficult to calculate and predict.

Safety aspects in warehouse

- Safety is very important & should be given top priority while carrying out the logistics activities in Warehouse.

The following Guidelines should be followed in Warehouse to avoid safety related accidents-

- No material on Gangway
- The charger for stalker & forklift to be kept at identified place & free from the material prone to catching fire
- Helmets should be used who is operating stacker/ forklift & they should not be left unattended
- Key should not be left at the stalker

- All fire equipment to be serviced regularly & data to be updated
- All the weighing scales to be calibrated regularly
- All high rise rakes should display load carrying capacity
- Any damaged parts in high rise rake to be banned for storage of material & should be rectified ASAP
- Safety shoes to be worn by all employees
- A regular training to be provided to all employees for all the safety issues
- A regular audit & LPC to be planned for ensuring proper compliance

5 S in Warehouse

A very high standard of 5S is must in all the stores/ Warehouse.

- The persons who are in habit of tobacco to be discouraged & not allowed to work inside the store
- Adequate number of dustbin to be made available for disposal of scrap material
- Proper visualization should be available for each & every part
- Garbage generated in the store to be removed frequently at defined time
- The availability of parts at their location, visual display & regular cleaning in store area is important
- Mechanized way of cleaning of store/warehouse to be planned so that manual efforts are optimized
- **A high level of 5S will always keep the high morale of operating persons & top management will have confidence in store activities**
- Daily mopping of the floor to be organized thru housekeeping services

General issues in Warehouse

- Material received in damaged condition due to improper packaging/mishandling during transportation
- Discrepancies are found during receipt of material
- Frequent stock discrepancies leading to line stoppage
- Delay in locating & issue of the material at the pre specified location leading to line stoppage
- Wrong issue of material & posting in system to shop leading again line stoppage
- Improper storage of material leading to lot of extra manual efforts in locating the material
- Incorrect dispatch of goods to customers leading line stoppage at customer end & penalty imposed by customers
- Improper packaging of finished goods leading to transit damages & customer complaints
- Lack of discipline in following safety guidelines & safety measures
- The adherence of correct process & standards at each step in warehouse will ensure the smooth operations of entire logistics activities.

Therefore regular process audit is must for improving the warehouse operations

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A GLOBALIZED WORLD

– LOCALIZING GLOBAL SUPPLY CHAINS

PRIYESH MISHRA

Many nations around the world have built vast industrial empires that together manufacture over a quarter of the world's products. When we think of making goods, one particular country comes to mind: China. Take a look at your clothing tag, the engraving on your mobile devices, or your dinnerware's imprint. You're likely to see the words "Made in China" looking right back at you a memorial to their manufacturing capacity etched in silk, ceramic, and steel covering the entire globe.

In fact, China alone accounted for 28 percent of the manufactured products in the world in 2018. China has become the world's manufacturing hub for a number of reasons, some of which are low labor rates, low taxes, lack of legislation, business innovation, and plain and simple hard work. Countries and businesses have recently begun to rethink their globalized approach to manufacturing, and we are seeing a slight revival in companies and governments relocating their supply chain in some cases.

Why is China not as appealing as before?

The low labor costs were the original advantage of exporting output to countries like China, but as economic development continues, so will the demand for higher wages. In Shanghai, for instance, the monthly minimum wage is 2480 CNY, compared to 690 CNY in 2007. That is a leap of 72 percent in just 13 years. But not being able to produce the goods as easily as before is not the only reason why businesses and policymakers are trying to return manufacturing to their local markets, there is also a drive to minimize environmental effects, reduce product delivery delays, and recently, increased consumer interest in locally sourced products. Such variables are among those that have led to the shift of supply chains to more local regions and markets.

The climate and its effect on globalized chains of supply

Over the past decade, the environmental effect of a global supply chain has been addressed at a rising frequency. Although the expense of manufacturing products in a low-cost labor market could be advantageous to the bottom line of the business, the environmental effect of globalized procurement does not reflect well on the brand of a company.

In general, carrying goods from abroad takes more energy than domestic manufacturing, and more than 3 percent of global carbon dioxide emissions are due to the shipping industry. Ocean shipping emits the least quantity of carbon dioxide of any form of logistics. Nevertheless, it could be argued that a regional supply chain would also minimize emissions of carbon dioxide as businesses rely solely on domestic logistics and negate the need for ocean shipping.

Responding and juggling the supply with demand:

People get what they want now today, and not later. Localized supply chains allow businesses to adapt more quickly to shifts in demand because they do not have to rely on products and services that take time to arrive from several thousand miles away. When responding to consumer demand, a globalized supply chain will generate extra risks. Next, lead time increases. It can reduce costs by relying on shipping parts or goods from China to the United States, but shipping overseas may take months. Furthermore, due to incorrect paperwork, the import costs need to be considered as well as the possible risk of goods being kept at the border or port. Misidentified items can cause significant delays as well.

In order to respond to unexpected shifts in demand, these risks can be mitigated by storing required goods in local warehouses. However, warehousing comes with added costs and there is still a possible chance of the demand surpassing the storage of the warehouse. If this occurs, a delay in product distribution to consumers is the only consequence. Warehousing requirements are minimized in a regional supply chain because the supply chain length can be shortened by weeks and months to allow companies and businesses to handle costs efficiently and adapt to changes in demand from their consumer base.

Local Demand for Local Product : Consumers are finally increasing their appetite for local products. On the television, on the radio, and in your neighborhood, you've probably heard the expression 'Buy Local' or "Be Vocal for Local." Locally, the drive to the source is mostly addressed when talking about food, but there is also an interest in items produced locally.

Local purchasing ensures that the money remains in the community and encourages employment, local growth, and increases local residents' future buying power. It makes people feel good to think that by purchasing locally sourced products, they help their communities. That feeling is an amazing marketing instrument that increases demand and growth, so if a supply chain is localized, it adds more to the brand recognition of a business.

Thoughts in Conclusion : It is a difficult decision to globalize or localize a supply chain because it depends heavily on the industry. Many other considerations, including tax consequences, free trade deals or tariffs, and the political environment of the day, may also affect one's decision to localize a supply chain. The aim is to realize that focusing on local is equally important as globalized Supply Chains.

Source: sourcingandsupplychain.com

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AI-ENABLED SUPPLY CHAIN TRANSFORMATION

Artificial Intelligence (AI) is no longer a fictional element or a science of the distant future wherein robots and humanoids rule our world; it is here and enabling revolutionary transformations across industries. The supply chain industry, experts believe, will benefit massively from this AI-led transformation. The industry is already leveraging AI-enabled technology to drive higher revenues and achieve improved efficiency. In India, it is expected that this transformation will see the industry valuation double in the next 2 years.

The supply chain, involving a highly interconnected and interdependent set of tasks, is a trade where even minor errors have multiplier effects on costs, revenues and business outcomes. AI, powered with Machine Learning (ML), predictive analytics, automation and so on, has the ability to process the voluminous supply chain data from disparate sources and equip business leaders with actionable insights and forecasts in real-time. Such insights enable quick decision-making and real-time change adaptation to streamline/reinvent functions and processes, minimize leakages and losses and develop a strong strategic edge.

The AI-powered solutions enable organizations to gain exceptional agility, precision, effectiveness, efficiency and end-to-end visibility in the supply chain if the right models and solutions are identified and applied.

AI-enabled supply chain transformation: Where are we?

Globally, there are diverse, cutting-edge innovations in the application of AI in the supply chain. Some of the path-breaking AI-enabled transformations include:

- **Contextual intelligence** provided by technology such as **Intelligent Robotic Sorting, AI-powered Visual Inspection, etc.** which are transforming warehouse management, shipping, tracking, logistics, packaging and so on.
- **Supervised learning, unsupervised learning and reinforcement learning technologies** are facilitating real-time decision-making, enhanced fraud detection, predictive insights, etc.
- **AI-led automation** in the form of self-driving forklifts, automated sorting, self-managing intelligent inventory systems, autonomous/ driverless ground vehicles, etc. are revolutionizing warehousing, logistics, distribution, inventory management, etc.
- **Intelligent software solutions** are enabling better supplier selection, product design, audits, evaluations, production planning, B2B sourcing, etc.

One of the leading innovators bringing sophistication and next-gen models in the supply chain space at the global level is Amazon. This e-commerce giant has revolutionized its business models, transformed customer experiences, forecasted demand with greater precision continuously reduced the delivery time and reigned supreme in e-commerce owing to its extensive use of technology including AI, ML, automation and IoT among others.

In India and across the globe, supply chain startups have been playing a key role in revolutionizing the space with their AI-led innovations, cutting-edge solutions and next-gen models. Some notable Indian supply chain startups that are consistently raising investments from Indian and global investors for their revolutionary solutions are:

- **Delhivery** : Offers technology-driven logistics services such as last-mile delivery, third-party and transit warehousing, reverse logistics, shipping, etc.
- **Fareye** : Offers an automation software and mobile platform to uncomplicate last-mile delivery issues.
- **Rivigo, Trukky.com, LogiNext, Blackbuck, 4tigo, etc.** : Offer smart logistics solutions including trucking, truck hiring, real-time tracking, delivery planning, etc. to B2B and B2C customers.
- **Shipsy and FourKites** : offer predictive supply chain platforms to ensure real-time visibility to their B2B clients.

There is growing awareness amongst organizations about the criticality of intelligent and efficient supply chain management and optimization to their overall business outcomes and long-term sustainability. Despite this realization, studies show that only 30-40% of Indian businesses are leveraging AI-enabled tech solutions in their supply chain activities while others still use traditional, linear models. Two main causes are – their lack of talent and resources for in-house innovations and their lack of awareness of grassroots innovations by startups.

Successful Corporate-Startup Collaboration: How Locus enabled Blue Dart to minimize last-mile inefficiencies?

The logistics giant, Blue Dart, faced a big challenge – the manual sorting of packages was inefficient and time-consuming, especially during peak times and when time-bound deliveries were required. As a company that strives to optimize operational efficiencies, Blue Dart partnered with Locus (a supply chain startup) to deploy its proprietary, automated shipment sorting and rider allocation solution – IntelliSort. This smart solution immensely reduced the time spent on sorting and enabled the company to send shipments out faster. The savings on manual drudgery and the increased accuracy in route mapping translated into higher cost-savings and better outcomes for Blue Dart.

The way forward : The above case study highlights how immensely corporates benefit when they collaborate with startups that offer cutting-edge, next-gen, intelligent solutions. Such collaborations will be the way forward for improved efficiency and transformative business results. Certain sub-segments like e-commerce logistics, 3PL, trucking, etc. are popular and heavily funded while other, equally critical sub-segments such as 4PL, warehousing, maritime logistics, etc. with revolutionary AI-enabled innovations are severely underfunded. It is important to bridge these gaps if the supply chain industry is to forge ahead.

Source: supplychainlabs.in

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THREE FACTORS CONTRIBUTING TO THE ONGOING GLOBAL SUPPLY-CHAIN CRISIS PLUS, PREDICTIONS FOR POST-PANDEMIC OPERATIONS

FUQUA SCHOOL OF BUSINESS

It may be years before business operations experts pinpoint all of the factors that triggered the ongoing global supply crisis. Certainly, the COVID-19 pandemic was a catalyst, but is not the sole cause, said Robert Swinney, an operations professor at Duke University's Fuqua School of Business. "It's not a single link that failed in a linear system," Swinney said. "It is the response of a complex system to major changes in conditions."

In a recent live discussion on Fuqua's LinkedIn page, Swinney explained three interconnected issues that have contributed to global shortages of microchips, new cars, new shoes, and other goods. He also explained how businesses are responding, what additional challenges they may face as they try to remedy the shortages, and how long consumers in the U.S. can expect issues to continue. "This is something that we will be studying for a long time, so the answers are not entirely clear, but it appears to be a combination of complicated global supply networks and logistics processes that are being simultaneously strained at many different points," Swinney said.

It appears that three major issues have contributed most to the chaos: COVID creating a shortage of workers that has reduced production capacity around the world, distortions to typical demand due to changes in customer purchasing behavior, and the fact that manufacturing and logistics systems are often run at or near their maximum capacity, he said.

Manufacturing and logistics : "Things like factories, ports and trucking capacity are expensive, so they're designed to run at high utilization. That means they don't have a lot of excess capacity," he said. Running close to capacity makes production and distribution more cost-effective, he said, but that means it also doesn't take much to overwhelm them. Because this is happening not just at one point in the supply chain, but multiple points, it becomes difficult to bring supply and demand back into balance.

When that happens, "all steps in the supply chain need to be examined and potential bottlenecks need to be alleviated," Swinney said, offering the long queues of cargo ships off U.S. coastlines as an example. A long line of cargo ships may make it seem like ports need to unload faster. But ports don't have a place for so many containers to be unloaded, he said. If you add storage capacity for extra containers, you'll need more trucks to transport the goods quickly, but there are not

enough chassis to transport the goods, because so many chassis are holding goods waiting to load onto cargo ships.

"It's an iterative process that takes a while," Swinney said. "Each bottleneck needs to be fixed and that immediately exposes another bottleneck. It takes time and careful analysis and cooperation by all stakeholders in this process."

Distortions to demand: the 'bullwhip' effect : As companies see increased demand for their products, they scramble to keep up. This can create distortions that ripple through supply chains, Swinney said. He uses retailers as an example.

"Imagine a retailer sees demand increase 10 percent for a product," he said. "Anticipating continued growth, it inflates its orders with suppliers not by 10 percent, but by 15 percent. Now their supplier sees a 15 percent increase in retailer orders. Also anticipating further growth, the supplier inflates its orders with its suppliers not by 15 percent, but by 20 percent. This pattern can repeat at each link in the supply chain."

Although these are small adjustments at each step in the supply chain, the compound effect of these changes can create the appearance of a huge swing in demand, he said, generating a pattern known as the "bullwhip effect," which gets its name because only a minor flick of the wrist creates significant motion in a whip. "Some companies may already be anticipating this," Swinney said. "The real key is to make sure accurate information regarding retail demand is being conveyed to firms deeper in the supply chain. That is, to avoid over-ordering and duplicate ordering so that we don't overcorrect for these disruptions while still building the necessary capacity to meet growing global demand."

Swinney conceded that coal and related energy issues affecting factories in China have also strained production, but most businesses have diversified their supply chains to account for temporary outages and weather emergencies. Those interruptions are typically limited and don't have the power to cause the sweeping issues that a pandemic can, he said.

Expectations for the future : "The most important thing to know is that these shortages aren't going to stay," Swinney said. "Companies are increasing capacity and demand will moderate after the holidays."

In fact, he adds, a potential overcorrection could result

from the bullwhip effect, meaning consumers could see a surplus of some previously hard-to-find items and potentially, lower prices. For businesses, recovering from this global supply crisis means acknowledging the disruption risks are more significant than we once thought, Swinney said.

"Companies need to reevaluate their disruption-mitigation strategies and be prepared to invest more in resilience," he said. "In the near term, I expect companies to exhibit renewed vigor in applying resilience measures. ... including sourcing from multiple suppliers in diverse locations, having some excess or backup capacity that can be brought online quickly, and holding inventory as safety stock. And while people often look to inventory first, this is not the only solution. It's one part of a portfolio of solutions, and it needs to be used carefully and selectively in concert with other strategies."

Long term, he said he expects to see businesses truly multi-source their operations, with a combination of local and distant suppliers that use completely different infrastructures – strategies he has studied in his research. He suggests firms will more deeply map their supply networks, considering not just their direct suppliers, but where their first-tier suppliers get their resources from, and so on. Despite the difficulties the supply crisis has caused, Swinney is optimistic about the opportunities he and other operations scholars and experts have to create more resilient supply chains that can actually withstand an event such as a pandemic.

"That makes this an exciting space to work in in the next decade," he said. "We have an opportunity to rethink supply chains. This piece originally appeared on Duke Fuqua Insights

Source: www.forbesindia.com

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INDIA ADOPTS US' JOINT STATEMENT ON COOPERATION OF GLOBAL SUPPLY CHAINS

On behalf of partner economies including India, US State Department released a Joint Statement of the 2022 Supply Chain Ministerial Forum, focussing on the global challenges. On behalf of partner economies including India, US State Department on Wednesday (local time) released a Joint Statement of the 2022 Supply Chain Ministerial Forum, focussing on the global challenge which includes — the COVID-19 pandemic, wars and conflicts and climate change.

"The shocks to global supply chains from pandemics, wars and conflicts, extreme climate impacts, and natural disasters have put in stark relief the urgent need to further strengthen supply chains, to work to reduce and end near-term disruptions, and to build long-term resilience. This is a global challenge we intend to approach resolutely and cooperatively," the joint statement read.

The partner economies include Australia, Brazil, Canada, the Democratic Republic of the Congo, the European Union, France, Germany, India, Indonesia, Italy, Japan, Mexico, the Netherlands, the Republic of Korea, Singapore, Spain, the United Kingdom, and the United States. According to the statement, for building collective long-term resilient supply chains based on international partnerships, all the partner countries aimed to follow various global supply chain principles including transparency, diversification, security and sustainability.

"We intend to promote transparency in consultation with the private sector, civil society, different levels of government, and other relevant stakeholders, consistent with Participants' domestic laws and international obligations, in order to strengthen the resilience of supply

chains," the joint statement read.

"We aim to promote diversification and increase global capacities for multiple, reliable, and sustainable sources of materials and inputs, intermediate goods, and finished goods in priority sectors, along with logistics infrastructure capacities, increasing the resilience of supply chains to make our economies less vulnerable to disruptions and shocks," it read further. The joint statement added that the partner countries encourage Participants to undertake this cooperation in partnership with industry, labor and civil society, and other relevant stakeholders, pursuant to domestic laws, to better understand and manage security risks to supply chains.

"We intend to encourage global sustainability and responsible business conduct across supply chains, as well as objectives set out in relevant multilateral environmental agreements to which we are parties, including the United Nations Framework Convention on Climate Change (UNFCCC) and the Paris Agreement," it read. All the countries also welcomed all economies and invite all industries, businesses, women, workers, officials from different levels of government, labour and civil society, and other stakeholders to join us in pursuit of resilient supply chains, guided by these principles.

"We acknowledge the key to resolving the next global supply chain crisis is to prevent it from happening in the first place" the statement said.

Source: www.business-standard.com

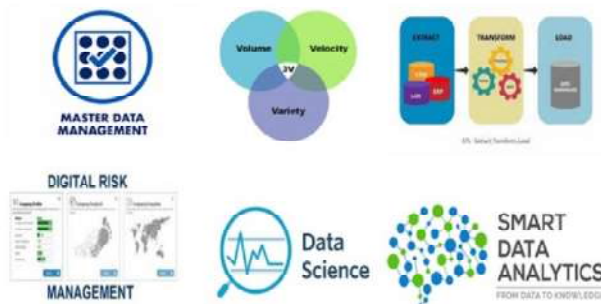
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DATA MANAGEMENT IN THE SUPPLY CHAIN

SUNIL BHARDWAJ

Overview : Given the enormous challenges that current supply chains face both on the demand as well as the supply front, it has become all the more essential to take steps and adopt suitable measures to enhance visibility and transparency across the chain to enable risk mitigation and to become more resilient in the medium to long term. Companies across all sectors related to both 'Discretionary' as well as 'Non-Discretionary' spending have realized the need for efficient data management across the chain.

Data Management : Data management comprises aspects related to data creation, data extraction, data transformation, data cleaning, data manipulation and analysis, visual analytics and reporting, performance monitoring, data dissemination, master data management, application of data science and operations research tools, supply chain analytics, data security and data governance. Let's dig deeper into some of these elements in brief. I shall touch upon five key areas.



Source – Samrt Data Analytics

Data Management Elements

Data Creation : Transactional and operational data spanning the entire supply chain – both upstream and downstream could be created in various ways. Company systems (standalone and ERP) as well as external systems (syndicated data) could be potential sources. Data obtained could be used for decision making directly or would need to be extracted, transformed and then loaded onto other systems for further processing.

In the case of supply chains, relevant data would include but not limited to supplier data, inventory data (RM, WIP and FG), customer data, pricing data, logistics service provider data, point of sale data, distribution data etc. All of the above data sources and types would be governed primarily by the data architecture of an organization. Moreover, the data utility and value are correlated to the 3Vs – Volume, Velocity and Veracity of data flows across the internal and extended supply chain networks.

Master Data Management : Although this aspect of data management and control looks fairly well established and well defined, the core and critical challenges emanate from this foundational layer of data management. If a company's master data structures are not well defined and managed, it could lead to erroneous analysis, business interpretations and outputs that could negatively impact strategic, tactical and operational decisions.

For example – an SKU that has been incorrectly grouped and classified in the inventory master could lead to excess

stocks or stock-outs due to consequent demand and supply planning errors in the case of an automated system. Therefore, the central control of master data elements in the ERP system could be the first step to ensure that the subsequent journey and transformation of the core data points result in desirable decision making.

Data Storage : Data could be stored in data warehouses or data lakes or even in the cloud. Clearly defined procedures and policies related to data storage need to be followed so that there is uniformity across the organization's departments, teams and business functions. Data access too needs to be clearly defined and mapped in order to prevent any misuse. Several other forms of data storage are available. The key point is to enable uniform rules across the organization.

Data Security and Cyber Risk : The Covid-19 pandemic has accelerated the discussion and deployment of various risk mapping and resiliency tools and technologies. Needless to say that cyber risk and supply chain data theft are serious concerns that companies with a local and global supply and demand footprint continue to grapple with.

Given this scenario, potential threats related to data secrecy, security and theft need to be mapped and corrective and preventive action plans need to be documented and shared across the organization through collaboration and on-going training and development. This area is by far the most complicated and requires the combined expertise of various private, governmental and non-governmental bodies to devise practical and workable policies and procedures. These would need to be audited from time to time and would need refinement to align with global trends and developments. Data security and cyber risk plans should form an integral part of Business Continuity Plans (BCP).

Data Analytics and Optimization : There is sufficient expertise and knowledge available in this domain. Moreover, academic papers, case studies and literature discuss and highlight the applications and benefits that would arise from the adoption, deployment and use of various digitalization and automations tools, techniques and technologies across the end to end supply chain. I shall not get into the details of the scope and applications of current technologies impacting the supply and demand side of the chain. However, unless the previous elements related to data management and architecture are addressed, the use of a sophisticated tool or technology would have limited operational and financial benefits to say the least.

Conclusion : Everything that I have touched upon or covered in this article is well known and well documented. I still felt it would be necessary and pertinent to provide a quick recap and reiteration of critical areas related to data management that need to be prioritized so that supply chains can function smoothly and risks could be mitigated. Finally, 'Data Governance' structures and mechanisms form the 'core and the nerve centre' and would set the tone and direction for frameworks, policies, procedures and processes related to data management as a whole. It's an ongoing journey. There is no start and end date for continual refinement and learning.

Source: sourcingandsupplychain.com

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GLOBAL SUPPLY-CHAIN PROBLEMS ARE LIKELY TO PERSIST THIS YEAR AND BEYOND

HILARY SCHMIDT, INTERNATIONAL BANKER

As the world continues taking tentative steps towards recovery from the COVID-19 pandemic, one global issue remains very much on the horizon even to this day. The disruption to supply chains inflicted by the virus outbreak—with a resulting drop-off in industrial activity—has failed to ease with real conviction, which means that 2022 and even beyond will remain decidedly tough for a number of global goods markets.

Thanks to the curtailment of business activity due to the health crisis, manufacturers continue to struggle to produce as much as they did during the pre-pandemic era—or even as much as is needed to meet the volumes required today. This has typically been down to several key factors, including shortages of raw materials and components, workers and power, as well as the shift in demand from activities such as eating out and attending events to buying more durable goods to be used within the home. Indeed, supply-chain disruption was chief among the factors underpinning the International Monetary Fund's (IMF's) downgrade of its 2022 global economic growth forecast to 4.4 percent in January from 4.9 percent in October.

It also means that accelerating inflation, which many believed to be a transitory phenomenon just a few months ago, is unlikely to disappear anytime soon, given the supply-chain disruptions companies face, thus slashing production and hiking prices in response. “We went into this year across our entire portfolio—without this conflict in mind—knowing that we were facing commodity price increases [and] shortages,” Joseph Wolk, chief financial officer at pharmaceutical company Johnson & Johnson, told an investment conference in early March. “So, we had a very healthy level of inflation or cost increases built into our plan. That’s probably gotten a little steeper over the last couple of days.”

And things are likely to deteriorate further before improving. A survey conducted by management consulting firm AlixPartners in December found that supply-chain issues were the biggest concern of the 3,000 chief executive officers polled, followed by the labour market and digitalization. “They realized that their business models, which have served them well for many years, are largely now not fit for the purpose” and that they’re rushing to build local, regional and global supply chains, according to AlixPartners CEO

Simon Freakley. “We went from what was a rolling sea of worry about economic cycles to a choppy sea of all these disruptive forces.”

Such supply-chain problems are only likely to get worse before getting better—that’s at least according to Moody’s Analytics. “As the global economic recovery continues to gather steam, what is increasingly apparent is how it will be stymied by supply-chain disruptions that are now showing up at every corner,” Moody’s associate director, Tim Uy, stated in a Moody’s report in October. “Border controls and mobility restrictions, unavailability of a global vaccine pass, and pent-up demand from being stuck at home have combined for a perfect storm where global production will be hampered because deliveries are not made in time, costs and prices will rise, and GDP growth worldwide will not be as robust as a result.” Uy also observed that supply would likely play catch up for some time due to the persistence of bottlenecks at every supply-chain link, including containers, shipping ports, trucks, railroads, airports and warehouses.

To compound matters further, Russia’s invasion of Ukraine looks set to cause major upheaval to global supply chains as a rapidly growing number of companies cease operations in the region. Bottling company Coca-Cola HBC, for instance, confirmed it had implemented contingency plans that included ceasing production in Ukraine, closing its plant and asking colleagues in the country to remain at home and follow local guidance. “To run everything on the supply chain—unfortunately, so much of it relies on oil,” Kona Haque, ED&F Man head of research, told Yahoo Finance Live on March 11. “It’s the reason why every time you see oil prices go up by 50 percent, a US recession typically follows. It’s that impactful. It’s that entrenched in the economy. And obviously the US clearly is very, very energy dependent.... It will have a reverberating impact across the supply chain.”

ING, meanwhile, expects the conflict to impact global supply chains severely as well as “flatten” global trade. “The improvement in global supply chains has ended before it ever really began. The war in Ukraine will bring longer-lasting disruption, and the trade outlook will bear the consequences of sanctions. Expect a new round of delays and protracted supply shortages,” said economists at the Dutch bank. “The biggest hit to

supply chains would come from any severe disruption to Russian energy exports, as several European countries are dependent on Russia for energy. But even in the absence of this, there are more challenges to come.” ING also noted that the exports of the likes of agricultural products such as wheat, corn and sunflower oil, as well as key precious and base metals such as steel, palladium, platinum and nickel, of which both Ukraine and Russia supply large amounts for the global market, will be particularly badly hit.

And according to Gartner, six key supply-chain challenges will arise as a result of the Russian escalation against Ukraine:

- § Key-material shortages,
- § Material-cost increases,
- § Production-capacity impacts,
- § Demand volatility,
- § Logistics-route and capacity constraints,
- § Cybersecurity breaches.

“We expect severe shortages of hydrocarbon, critical minerals, metals and energy,” Gartner added. “Prices for those items will likely spike, thanks to both the shortages and behaviors such as irrational buying and protectionism. This will, in turn, impact manufacturing operations up- and downstream as much as raw material mining.” The research and consulting firm also recently warned that important logistics routes will be restricted, such as the Black Sea route and railroads and highways from east to west and vice versa, resulting in delays and disruptions with spill-over effects on Chinese ports and other key transportation nodes likely.

All this means that any return to normalcy for global supply chains is unlikely to materialise in 2022. “It’s unlikely to happen in 2022,” Phil Levy, chief economist at Flexport, a freight-forwarding company based in San Francisco, recently told *The New York Times*. “My crystal ball gets murky further out.” Indeed, a “new normal” may be taking hold, in which such disruptions simply become part of the fabric of global supply chains. “Lockdowns are hopefully a thing of the past outside China, but there are still all kinds of restrictions in place to the movement of people, including workers with in-demand skills,” Flavio Macau, an associate professor specialising in supply chains at Edith Cowan University in Western Australia, told the UK news publication *The Guardian* in December. “My view is that supply chains still have high blood pressure, consistently showing arrhythmia. It will take to mid-2024 to get back to ‘normal’.”

Are there ways to alleviate the chaos in the meantime? The US government has certainly made significant efforts over the last year to assess vulnerabilities in—and strengthen the resilience of—the country’s critical supply chains, which should prove useful to other

nations seeking to similarly contain their own supply-chain issues. On February 24, exactly one year after the Biden Administration issued an executive order to investigate the US’s most pressing supply-chain requirements, seven different cabinet agencies published reports identifying key supply-chain weaknesses and devising multi-year strategies to address those weaknesses.

The White House also published a capstone report in which a number of measures that have been taken to reduce the vulnerability of US supply chains across a range of key sectors were highlighted, including the strategy established in June to strengthen supply-chain resilience and mitigate future disruptions by focusing on five broad policy areas:

1. Rebuilding domestic production and innovation capabilities;
2. Supporting the development of markets that invest in workers, sustainability and quality;
3. Leveraging the Federal government’s role as a purchaser of and investor in critical goods;
4. Strengthening international-trade rules and trade-enforcement mechanisms;
5. Working with allies and partners to decrease vulnerabilities in global supply chains.

In the private sector, meanwhile, the British Standards Institution (BSI) released its annual “Supply Chain Risk Insights Report” in November 2021, which identified the crime, climate and convergence of threats that emerged in 2021 as the dominant risks to the global supply chain. Although released prior to the Russia-Ukraine conflict, the report acknowledged that global supply chains would “continue to be massively disrupted way into 2022” and that “it may well get worse before it gets better”.

Nonetheless, the report sought to answer a handful of critical questions surrounding current supply-chain issues that are likely to persist for some time. Recommendations for solving these issues, according to the report, include the need for companies to understand their suppliers fully; being proactive and visionary and embracing change before it is imposed on them to drive competitive advantage; prioritising supplier performance to ensure that suppliers are managing their business relationships correctly; identifying pain points and establishing effective communication between all parties; and fully understanding the interrelated nature of things, not just within organizations but across value chains. “Changing consumer behaviour and automation are other key trends to follow closely as businesses seek to apply the lessons learned from the COVID-19 pandemic to become more resilient,” the report added.

Source: [internationalbanker.com](https://www.internationalbanker.com)

INDIA PLAYING A MAJOR ROLE IN THE GLOBAL SUPPLY CHAIN SYSTEM

LALIT DAS, FOUNDER AND CEO
3SC SOLUTIONS

Over the last decade, the world's perception of India and its capabilities has shifted. For the rest of the world, our nation is becoming an example of a thriving economy. On a world scale, India is regarded as an important factor in the global supply chain, portraying itself as an attractive destination for global corporations. The entire world is waiting for India's steadfast and consistent efforts to convert the nation into a worldwide leader through its many initiatives.

Covid-19's Impact on the Worldwide Supply Chain

Covid-19 has had a significant influence on the logistics industry in recent years, and since it is one of the most significant sectors that serve other industries, the rate of recovery has been gradual. According to the McKinsey Global Institute, India's logistics sector would increase at a compound annual growth rate of more than 10% from \$200 billion in early 2020 to at least \$320 billion by 2025. Even though the logistics business is constantly developing, the future is more unpredictable now than it was when MGI made that prediction, due to the continued Covid-19 attacks on a variety of sectors. Because India's logistics economy is consumer-driven and unstructured, the epidemic caused significant disruptions. It is, nevertheless, on the mend and seeking to recapture its former splendor.

Covid-19's Impact on the Indian Supply Chain Industry

During the Covid-19 pandemic, however, India arose as the chosen destination. This was made possible by clearly defined global corporate and country targets to reduce supply chain risks in the longer-term and repair damaged value chains in the short term. Companies that depended on overseas goods, were severely impacted as a result of supply chain breakdowns. Methods that had been tested were no longer feasible. It was felt that the entire process needed to be varied, altered, and shifted.

Role of India in the Supply Chain Industry

Because of its quick turnaround time, India became the favored business location during and after the Covid-19 pandemic. As firms attempted to repair their damaged value chains in difficult times and reduce long-term supply chain risks, India was an alternative choice to fill the distribution network and vast domestic market with expanding disposable incomes. These

elements are combined with the comparative void, since it is a stable nation with safe investment conditions. The country's claim is strengthened by its diverse corporate environment; skilled, inexpensive labor readily available in the market will also contribute to the country's emergence as an international commercial hub.

By creating a parallel environment for industrial success and becoming a member of global supply chains, India may benefit from a better legal structure for SEZs (Special Economic Zones) featuring duty-free imports. The SEZs have had a favorable impact on IT-related operations, but only a little impact on manufacturing. One of the key reasons seems to be that the private sector was in charge of building SEZs. Most of them were too small to compete in the global markets.

Expressway access to the National Highway network, harbors, and airlines will boost the SEZ's desirability as an investment location. The new DFI (Development Financial Institution) ought to be able to provide long-term finance for such large-scale initiatives. Infrastructure such as lower-cost power, shared effluent treatment centers, skill development centers, global testing centers, and certification facilities, would also be required. The most major change would be to allow sales of SEZ-produced items to the domestic market, with duties charged at the lowest prescribed rate to imports from every trading partner, as well as any trade agreement's value-added standards.

Summing Up: India may present itself as an appealing investment location for investors worldwide, thanks to its strong macroeconomic fundamentals, positive demographic dividend, improved ease of doing business (EoDB), and access to resources for expanding manufacturing facilities. This would involve the government, local governments, and businesses all working together to realize this potential. According to the government, India is on its way to becoming a member of the international supply chain. If the potential opportunities are embraced and a well-thought-out course of action is devised and successfully performed, it will quickly be catapulted, and further development will follow.

Source: timesofindia.indiatimes.com

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NO ROLE FOR INDIA YET IN TESLA'S NEW GLOBAL SUPPLY CHAIN HEDGE

ANJANI TRIVEDI
BLOOMBERG OPINION COLUMNIST

From India to Indonesia, Elon Musk is scouting for sites to make more Teslas. With the world mired in supply chain chaos, access to materials matters most. He's got it right. After lobbying against India's tight manufacturing policies and prohibitive import duties, Musk is headed to meet Indonesia's President Joko Widodo and visit parts of the country, which is also the top producer of nickel, a key metal for batteries. That's an astute bet—for Tesla and Indonesia. And a missed opportunity for New Delhi. To meet ambitious electric vehicle (EV) targets, Indonesia has drawn in several battery and car makers in recent months with a variety of incentives.

With a friendly policy bolstering the country's EV goals, companies have started committing billions of dollars. LG Energy Solution, along with others, is investing about \$9 billion in a full supply chain from mining to manufacturing in the country. With Hyundai, the firm is developing a battery plant, too. Meanwhile, the world's top powerpack maker Contemporary Amperex is investing almost \$6 billion in a battery project with state-backed Aneka Tambang and Industri Baterai Indonesia. Further up the value chain, China's Zhejiang Huayou Cobalt and Vale Indonesia announced they would work together on a nickel project.

The move by companies across the EV supply chain into Southeast Asia's largest economy shows how important it is to be close to a source of raw materials. If there's one thing the past year of logistical screw-ups and delays has shown the industry, it's that proximity is key. Even if global supply and demand is balanced on paper, moving industrial goods around is expensive.

Tesla knows this well. It has created large manufacturing hubs in China and Germany. After having trouble making EVs in the US, its market share has grown globally. Now the EV-maker is looking to secure materials and make its own batteries, while stopping short of buying mines. Wherever Musk sees problems in production, he looks for a solution. Tesla is essentially creating discrete supply chains across the globe.

Indonesia churns out around 1 million cars in a good year, and is dominated by Japanese producers' smaller vehicles. Its auto market pales in comparison with China's and the US's, with EVs a small portion. Potential sales generated in Indonesia wouldn't really move the needle for Tesla. Yet, Jakarta is leveraging existing resources, an EV business-friendly policy and the right story to make it fertile ground for large-scale

investment. The moment that happens, Indonesia will be able to boast about its battery manufacturing supply chain on the global scale.

Meanwhile, India continues to hem and haw over import duties. Government officials in New Delhi have made bold statements about their ambitions, talking up their desire to draw in Tesla. Earlier this month, road transport minister Nitin Gadkari said that Tesla would benefit from a plant in India. Yet, customers who placed orders are still waiting and it's unclear how Musk's firm would get a leg up. Now, there are questions around whether Tesla will make its way into India at all.

That is probably a good bet, too. Firms are worried about procuring parts and dealing with logistical issues and high shipping costs. Progress on EVs has been scattered and commitment isn't clear. Toyota, one of the world's biggest automakers but an EV laggard globally, has pledged to invest \$624 million in making EV components through its existing units in India, but it's unclear who will buy them. Even India's top automaker Maruti Suzuki isn't planning on EVs until 2025. Add in policy hoops and punitive taxes, and India has all but ruled itself out by making the cost of investing in its market so high. India's vaccine king, Adar Poonawalla, also decided to weigh in earlier this month. He tweeted that putting capital into making cars in India would be the "best investment" Musk would "ever make." That's perhaps too optimistic.

EV and battery manufacturers are in high demand across the globe and it will take far more than bold words and political ambition. Resources must be made available and policy should be sufficiently coherent for manufacturers to work with. It's bizarre, then, that Prime Minister Narendra Modi's government continues to hold back. Yes, there are a few local EV models, but the Indian auto market remains an aspirational one. That means wide-scale adoption will pick up pace only once there are enough models that people want to buy—like Tesla's Model 3—and enough charging facilities that make it easy, as the evolution of the two-wheeler market showed.

Just as China made Tesla a global company, Indonesia could do the same for its battery supply chain. All while making manufacturing more affordable and eventually, EVs, too. It's a means to an end—and a smart one at that.

Source: bloomberg

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RETHINKING SUPPLIER RELATIONSHIPS FOR A SUSTAINABLE FUTURE

PHILIP DOUGLAS

Making quality business decisions requires accurate and complete data to guarantee sustainable operations, says Compleat Software CEO, Philip Douglas

As sustainability issues continue to take centre stage, organisations of all shapes and sizes are under increasing pressure from stakeholders to ensure environmental concerns are addressed.

There has been stellar work done already to ensure that sustainability is on the agenda of many financial and procurement leaders and their teams, but while this is a great start, sustainability needs to be woven into the fabric of a business, and within employee mindsets.

To make this happen, we need to rethink the way in which we work with suppliers, and this starts and ends with data. If you have access to accurate supplier data, it can help create and maintain sustainable business practices.

But how can businesses access quality data? Also, how do they use it to ensure they have a sustainable supply chain?

Collecting the right data

Quality business decision-making needs accurate, complete and relevant data, and this is the same logic we must apply when looking at supplier sustainability. But asking suppliers via surveys for information isn't the best way to harvest accurate data, especially around sustainability.

Yes, you can ask specific questions but these must be set against your own sustainability parameters, and cannot be done in isolation to the rest of the business. This is before you even consider the time it takes to collect the responses and make an analysis, by which time the data is likely out of date, making the whole task redundant.

With data it's essential to communicate with the right supplier departments, and to understand what the require data will help you to achieve. Consider what information your organisation needs to make an assessment of the sustainability attributes of the supplier and also, who is best placed to provide that

data.

CFOs and finance leaders can help ensure relevant data is provided to support their organisation's sustainability efforts, by building strong relationships with their supply chains and knowing exactly what they're looking for.

Communication must be led by finance leaders

Relationships are all about communication, and if organisations don't have any real relationship with suppliers then when seeking information from them, this will cause issues.

For example, if an organisation needs data in order to assess the sustainability credentials of Supplier X, and issues a survey to that supplier, if there is no relationship, how can you know you are taking the best person?

Also, if the supplier is unsure what information is being requested – or how, or why, the survey relates to them, or who should respond - this may cause them to perhaps underestimate the importance of what is being asked of them. It might also lead to inaccurate data being given, which will hinder your sustainability planning.

Worse, you may be provided with false information that opens you up to accusations of greenwashing, something no organisation wants.

The best approach is if every purchase and invoice is properly documented and completed digitally. Then your company will have the data it needs to make informed decisions on spending habits.

There is no room for complacency; businesses, suppliers and employees alike have to work together to ensure sustainability issues are addressed.

Gone are the days of sustainability being treated as a side issue. Only through a combination of data-driven digital procurement – built on a solid foundation of trusted supplier relationships – can an organisation ensure a sustainable future.

Source: supplychaindigital.com

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REVVING EXPORTS TO U.S. KEEPS INDIA IN RACE TO BE NEXT CHINA

India, believed by many to have the potential to become the next China, is finally making headway in the exports market as it broke into the top five suppliers of Christmas decorative items and t-shirts to the U.S.

Sea-borne shipments of festival goods and accessories to America touched \$20 million last month, almost triple the value from the year-ago period, according to U.S. customs data. In the process, India gained a clear lead over the Philippines as buyers diversify supply sources in the face of rising labor costs and disruptions from China's strict Covid-zero policy.

One such beneficiary of the early Christmas present is Amit Malhotra, whose Asian Handicrafts Pvt. supplies decoration items to global brands such as Walt Disney Co., London's Harrods, Target Corp. and Dillard's Inc. He confirmed a 20% jump in orders compared to a year ago, and that he has bumped up production capacity.

"This year we have shipped over 3.2 million units of Christmas decoration, up from 2.5 million last year," said Malhotra, director at Asian Handicrafts. "Though China exports a significant share of Christmas decoration items, many first-time buyers have been approaching us now," he said.

The trend isn't limited to Christmas goods. Exporters in Asia's third-largest economy have been witnessing a significant increase in orders from both the U.S. and Europe, with the shift mostly seen in low-cost, labor-intensive sectors such as apparel, handicrafts and non-electronic consumer goods. While diversification of supply chains began with the U.S.-China trade war in 2018, India hadn't seen any meaningful gains back then as countries such as Vietnam cornered the bulk of orders that were moving away from Beijing.

The pandemic, which saw China adopt strict lockdowns, is helping change that. India's goods exports, which touched \$420 billion in the fiscal year ended March, have already reached close to half that level in the five months beginning April. While that's hardly worthy of comparison to China's annual \$3.36 trillion of exports, analysts view it as a good starting point for the sub-continent's largest economy, which is currently growing at the world's quickest pace.

"Taiwan, the EU, the U.S., Japan — all are willing to give India a second look," said Alex Capri, a research fellow at Hinrich Foundation, set up by U.S. entrepreneur Merle Hinrich to promote sustainable global trade.

Indian government data showed Christmas decoration exports in the year ended March increased more than 54% from fiscal year 2020 levels, while handicraft exports witnessed a jump of around 32% during the same period. China's continued decoupling from the global economy along with post-pandemic recovery presenting an opportunity for India to accelerate its investment in longer-term competitiveness and prioritize "winnable" sectors, Siddharth Jain, a partner in the operations and performance practice at Kearney, said. By 2030, India is projected to have the world's most abundant labor force, and could contribute over \$500 billion annually to the global economy, according to a report by Kearney and the World Economic Forum.

"We have started to see green shoots of this with India's exports in FY22 reaching around \$420 billion, far higher than earlier years," Jain said. "This was driven by a combination of external as well as internal factors." India also managed to surpass El Salvador to become one of the top 5 suppliers of cotton t-shirts to the U.S. this year.

The apparel sector, where India competes with nations like Bangladesh, saw an uptick owing to multiple factors including a ban of all cotton products from China's Xinjiang region over alleged ill-treatment of its ethnic Uighur Muslim minority, said Gautam Nair, managing director at Matrix Clothing Pvt., a medium-sized garment export firm. "The surge also further accentuated due to huge boom in buyers' purchase and supply chain diversification."

Medium-size and large export firms saw a jump of 30-40% in their order books last fiscal year and the upswing would be more visible in the current financial year ending March 2023, Nair said. Matrix Clothing, which exports apparel to global brands including Superdry, Ralph Lauren, Timberland, and Napapijri, has seen orders climb by 45% last fiscal year compared to the pre-covid year. Still, there are hurdles to the growth of low-value-added manufacturing in the form of non-labor costs, warn analysts.

"The bigger problems are the legacy issues of contract enforcements, tax transparency etc.," said Priyanka Kishore, an economist at Oxford Economics. "These do pose a challenge to India's manufacturing ambitions and need to be addressed for the country to fully tap its potential as a manufacturing hub."

Source: Bloomberg

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SOLUTIONS TO THE SUPPLY CHAIN BULLWHIP EFFECT

PETER EDLUND, VICE PRESIDENT OF PRODUCT MANAGEMENT
RETAIL AT TRUECOMMERCE & SCB CONTRIBUTOR

One of the curses of the Great Supply Chain Disruption of 2020 was the phenomenon known as “the bullwhip effect.” It describes a series of events by which relatively small issues at the beginning of a supply chain become much larger and less controllable at the end of the “whip.”

U.S.-based retailer Target Corp. announced on June 7, 2022 that it was working through excess inventory due to unexpected changes in consumer behavior, and that it would take a short-term hit to its margin. Its merchandising teams had forecasted a continuation of high consumer demand for home goods. The retailer now expects its Q2 operating margin rate to be 2% instead of its previous guidance of 5.3%, as it makes “revisions to sales forecasts, promotional plans and cost expectations by category,”

As an example, take kitchen cookware. The category buyer normally might assume sales of 100 units per day, but the buying team is noticing sales that have reached 150 units per day. The retailer adjusts its forecast accordingly, and orders enough stock from the wholesaler to sell 200 units a day. The wholesaler receives the order for 200 items, then orders 300 units from the manufacturer. The manufacturer receives the order for 300 items and increases its manufacturing run to 400 items.

A spike in demand from 100 units a day has ballooned to 400 units, many of which won't reach the retailer until after the surge is over. In the above example, the retailer didn't anticipate the speed at which the consumer shifted spending to dining out, with less focus on home cooking and the need for new pans.

Manufacturing products takes time, so what happens if, while those items are being made, early

demand fades for the retailer? Sales of cookware would immediately drop. The retailer's forecasts are then affected, and it won't order more units even though production has increased, leaving the manufacturer to seek alternative channels to reduce its inventory position, typically at deep discounts. All of this amounts to periods of both overstock and low stock and unpredictability throughout the supply chain.

Causes of the Bullwhip Effect : The bullwhip effect starts with simple demand spikes, however many elements might contribute to it. Global supply chains are becoming more complex, consumer demands are changing, orders are more varied and detailed data is widely available. These and other factors can create a complex but competitive supply chain. Because these supply chains tend to involve more parties and touchpoints, there are many places for the bullwhip effect to take hold.

Secondly, meeting customer demands often involves more options, like in-store pickups and direct-from-vendor shipments. These differing requirements can increase pressure to have products on hand, and cause the supply chain to branch off into more avenues. Ensuring stock for each option can contribute to overstocking. Moreover, partners in the supply chain might choose to round orders up or down for the sake of simplicity or wait until a certain date to order, which isn't necessarily an accurate reflection of demand. Discounts, sales and other offers affect typical demands and may also lead to inaccurate forecasts, as buyers attempt to reconcile these sales with their usual forecasting measures.

Ration gaming can also be a cause of the bullwhip effect. It occurs when upstream inventory becomes scarce, so retailers and suppliers order larger quantities and build up their own stocks to

ensure they can meet demands, hurting the entire supply chain in the process. One study found that ration gaming increased the bullwhip effect by 6% to 19%. If replenishment product doesn't reach the seller for a long time, it won't line up with the demand and help the seller meet customer needs.

Impact on the Supply Chain : The impact of the bullwhip effect on supply chain management is significant. To start, trading partners have to pay for the physical storage space, as well as the inefficiency of storing items that might not be in high demand anymore, and the cost of transporting and selling the items, which could be steep if they have to discount the products to get people to buy them. None of this is cheap. The bullwhip effect also makes storage and shipping costs less predictable.

Trading partners will also need to pay employees to handle, sort and sell additional items on hand. Similarly, if a seller runs out of stock, salespeople might need to work harder to locate alternatives or arrange for deliveries later. These labor demands can add up.

Running out of a product can cause problems for a trading partner's reputation and profits. The failure to supply a desired product can drive shoppers to look for new partners or brands. Excessive inventory can also cause costly waste. Consumable goods, such as foodstuffs or pharmaceuticals, might expire before the stock is eliminated, while other items could be withdrawn from sale or replaced by newer versions. These events could reduce the items' value, increase the number of resources required to sell them, or cost the trading partner the price of an item that needs to be thrown away.

Countering the Bullwhip Effect : While the bullwhip effect can have a range of influences, it also has several solutions. Following are some tips on how to reduce it.

Increase transparency between suppliers and customers. The bullwhip effect amplifies because supply chain members don't have a full picture of why buyers are increasing demand. Improving

visibility across the chain can help everyone see the context of demand changes.

Start predicting. Smart predictions are key to better understanding demand changes. Much of the industry is already getting on board; according to Gartner, over 50% of supply chain organizations will invest in artificial intelligence and advanced analytics applications by 2024.

Encourage collaboration between partners. Members of the supply chain need to work together to avoid feeling the bullwhip effect. Vendor-managed inventory is foundational for this approach, as it puts the necessary information for working together in one place, and uses electronic data interchange to both push and pull inventory and order data between partners.

Reduce lead times. Long lead times can exacerbate the bullwhip effect, with products arriving long after they're needed and becoming overstock. Reducing lead times across the board and placing orders when demand is high can mitigate bullwhip issues.

Minimize or address price fluctuations. Frequent promotions or discounts can disrupt typical buying patterns and make it tougher to predict demand. Trading partners should evaluate their stance on these promotions and see if they might be causing more interruptions than benefits. While it might not be necessary to get rid of them altogether, trading partners should consider minimizing them or incorporating them more accurately into their predictions and forecasts.

The bullwhip effect can quickly get out of control and hit every part of the supply chain with adverse effects. Visibility and transparency are some of the best resources for helping trading partners counter its effects. Organizations that can keep the bullwhip effect to a minimum can ensure more predictable and profitable supply chain management.

Source: www.supplychainbrain.com



THE MANY KNOTS IN SUPPLY CHAINS AND HOW TO UNTANGLE THEM IN 2022

MAMTA SHARMA
ASSOCIATE EDITOR - PEOPLE MATTERS

Industry experts say to survive the supply chain struggles in 2022, companies should be decisive in making the necessary changes to adapt to new challenges, along with adopting new technologies and automation like AI, ML and IoT for a streamlined supply chain operation.

The COVID-19 pandemic was a Black Swan event for the entire world, and especially impacted the supply chains of an increasingly inter-connected global industry. Supply chains around the world, not only in India, have faced unprecedented challenges over the last two years. With every passing month, the dynamics of the market changed, leading to changing challenges for this vital link.

The supply chain continues to be in crisis in the new year. In addition to port congestion, supply chain companies are facing a series of shortages in containers, labour, and transport equipment and these challenges are expected to persist for a long time to come.

Industry experts say that companies need to embrace technologies to withstand the known and unknown challenges of the present and future supply chains and help ensure business continuity.

"In 2021, we saw massive global supply chain challenges, and some of them will continue even in 2022. Different parts of the world have experienced supply chain issues that have been aggravated for different reasons. For instance, power shortages in China have affected production in recent months, while the UK and the US are facing a shortage of truck drivers, as is Germany, with the former also experiencing large backlogs at its ports," says Renu Bohra, CHRO – India and Indian Subcontinent, DB Schenker.

The shipping industry is also facing challenges because of congestion in the ports, leading to a bottleneck that impacts the overall import-export operations. "The other challenges also include rising freight prices, transport services being impacted due to labour shortages, as well as high container and warehousing costs, all of which contribute to hampering the overall global production," she adds.

Bohra says some of these struggles will be eliminated with time and others, which are more permanent, "will change the way we think about supply chains, making it quintessential for the supply chain companies to adopt the new ways of working and address these

challenges".

"For companies to survive the supply chain struggles in 2022, they should be decisive in making the necessary changes to adapt to new challenges, along with adopting new technologies and automation like AI, ML and IoT for a streamlined supply chain operation," she adds.

Bhavik Mota, Director, Regional Ocean Management, Maersk West & Central Asia says a lot of the supply chain woes in the system today are due to the unprecedented demand for goods, especially in the western markets of the US and Europe. "The demand for goods, and therefore the demand for transporting them is very high. The supply of the space on vessels or the containers on the other hand is limited," he adds.

This imbalance between demand and supply, combined with the pandemic-driven restrictions, has created unprecedented bottlenecks in the logistics infrastructure, leading to a shortage of containers and vessel space. "This continues to be the biggest challenge for India as the Indian exporters struggle to deliver their goods in the global markets," says Mota.

"Freight rates are a function of demand and supply. With the demand extremely high and the supply of space in terms of containers or on vessels limited, freight rates are going up," he adds.

There is a major shift in consumer behaviour that is also seen – from offline shopping to online shopping. Mota says this is forcing India's supply chains to recalibrate themselves to be able to cater to rising eCommerce. The need for warehousing is, therefore, going up.

Mota adds that large manufacturing facilities are going from 'just-in-time' to 'just-in-case' in order to be resilient enough to face unknown crises ahead.

The overall supply chain ecosystem still faces the challenge of lack of adequate digitalisation. "While the pandemic did give it a push, it is not fast enough with a lot of resistance across stakeholders of supply chains and this is slowing down the transformation that the sector desperately needs," says Mota.

Source: www.peoplesmatters.in

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How to apply:

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GLOBAL SUPPLY CHAIN QUIZ

1. Global supply chains have many risks to be addressed. A risk that is encountered only in a global supply chain is
 - a) Delivery risk
 - b) Service risk
 - c) Quality risk
 - d) Exchange risk
2. Logistics disruption results in many challenges. A challenge that cannot be attributed to logistics disruption is
 - a) Reengineering products
 - b) Goods piling up in storage
 - c) Ship diversion/ship slow down
 - d) Slow pace of inventory refilling
3. A challenge that is not observed in a global supply chain is
 - a) Stable operations
 - b) Improving visibility
 - c) Adapting digital operations
 - d) De-risking supply chains
4. The word that is quite often used especially after the covid pandemic to describe the capability needed in a supply chain is
 - a) Robustness
 - b) Resilience
 - c) Lean
 - d) Efficient
5. There are many business priorities that affect the 2020s global supply chain. Which among the following is not such a business priority
 - a) Climate change
 - b) Circular economy
 - c) Single sourcing
 - d) Sustainability
6. The real time visibility in a supply chain is enhanced by
 - a) Robotics
 - b) Cobot
 - c) Internet of Things
 - d) 4PL
7. The type of letter of credit (LC) that is used as a guarantee against the possible non-fulfillment of a contract is
 - a) Confirmed LC
 - b) Irrevocable LC
 - c) Standby LC
 - d) Transferable documentary credit
8. An INCOTERM does not describe
 - a) Obligations
 - b) Payment
 - c) Risk
 - d) Costs
9. A statement that is NOT true about the logistics disruption that occurred due to the Suez Canal blockage in March 2021 is
 - a) There were approximately 350 ships lined up in que
 - b) The blockage lasted for a week
 - c) The disruption resulted in the congestion at ports
 - d) Supply chains restored normalcy soon after the blockage was removed
10. A statement NOT true about net-zero supply chain is
 - a) In customer centric sectors end to end emissions are higher than direct emissions
 - b) Eight major supply chains account for more than 50% of global emissions
 - c) Net-zero supply chains considerably increases end-consumer costs
 - d) De carbonizing supply chain is hard as it is difficult to gather sufficient data

Warehousing quiz answers

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

THE DEFINITIVE GUIDE TO GLOBAL SUPPLY CHAIN MANAGEMENT

Global supply chains are increasingly complicated and more tricky to manage. Many businesses rely on complex global supply networks that span continents and rely on the rapid shipment of goods and parts.

Take Unilever, for instance. Their massive supply chain includes nearly 100,000 employees, working with over 70,000 suppliers and more than 1.5 million farmers. In all, Unilever runs a logistics network that transports over a distance of more than 1.5 billion km each year. Whether your global supply chain is like Unilever's or much smaller, you'll need to get to grips with your global supply chain management. This guide will cover the risks, benefits, and partners you need for a successful supply chain. Also, we'll provide you with insights on redefining strategic alliances. Ready? Let's dive in.

What is Global Supply Chain Management : To understand global supply management, you first need to understand the concept of supply chains. A supply chain refers to all the processes involved in sourcing, manufacturing, and bringing a product to the market. It covers sourcing materials, production, transportation, and distribution to the customer's hands.

A global supply chain is the distribution of goods and services within a trans-national companies global network. Global supply chain management is how you manage and optimize efficiencies at every stage of the supply chain.

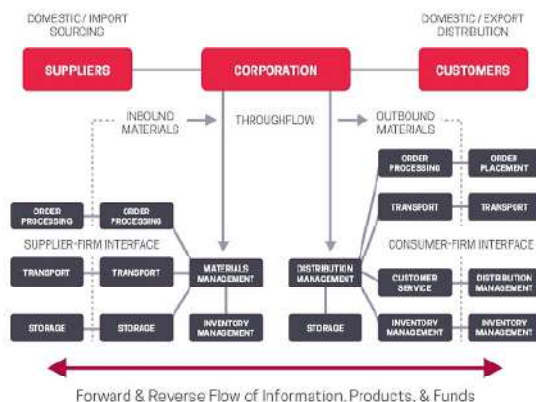
Basic supply chain management should cover the following areas:

- **Planning:** In planning, you establish the goals, strategies, and metrics to inform your company's supply chain management. The planning process should cover production, distribution, logistics, and procurement in line with your company's long-term vision.
- **Sourcing:** Sourcing, also known as procurement, is the process of finding raw materials and suppliers for your business processes. It involves locating and assessing suppliers to find the best option for your company. After choosing your supplier, you'll have to monitor and manage supplier relationships.
- **Manufacturing:** Manufacturing involves all activities and processes that help you receive raw materials, manufacture the product, test for quality, store, and prepare for shipping. In some cases, transnational companies outsource their production to local companies. While this move usually saves cost, it can have legal ramifications when the local manufacturer does not comply with international labor laws and best practices.
- **Delivery and Logistics:** This stage is all about delivering your product to the customer promptly. Delivery and logistics covers everything from coordinating customer orders, scheduling deliveries, dispatching loads, invoicing customers, and receiving payments.
- **Returning:** Returning is where you manage returns and exchanges, a process known as reverse logistics. A returns management process is part customer support, part logistics, and part inventory management.

These are the five core tenets of global supply chains.

Some companies and academics add a category known as "enabling" to their definition of global supply chains. Enabling includes all support services

The International Supply Chain



that aid in the optimization of supply chains. That can cover finance, HR, IT, facilities, portfolio management, product design, sales, and quality assurance.

What Are the Risks Associated With Global Supply Chains

Risks are part and parcel of every supply chain. Whether you're transporting products through the air, land, or by freight, expect periodic disruptions. While some disruptions are a headache for people involved in global supply chain management, others can result in huge expenses. According to a research paper by McKinsey and Co., "global disruptions have meant that in every year over the past several years, at least one company in twenty has suffered a supply-chain disruption costing at least \$100 million."

Anticipating and preparing for the potential risks in your supply chain can save you from disaster. Here are the risks associated with global supply chains and how your company can be risk-resilient:

Political and Government Instability: Political stability is hugely important for any business. When you invest in a country, you want to know that those investments are secure. According to the Supply Chain Management Review, political stability is one of the top ten concerns for companies with a global presence. This desire for political stability is understandable. Major world events like Brexit and the US/China trade wars can, as the example from McKinsey Co. shared earlier, cost companies hundreds of millions of dollars. Prolonged instability can even shape global supply chains.

For example, Tesla decided to base its European Gigafactory in Germany rather than the UK because of Brexit. It's just one example of how political instability can impact trade and investment decisions. Before you take your business to a country, study its history, geopolitical landscape, and culture. Consider the implications of political instabilities. A new government, regional tensions, or something else has the potential to bring your supply chain to a standstill.

Alongside political instability, you also have to consider economic stability. From volatile currencies, high inflation rates, unfriendly tax laws, there is a wide range of financial challenges that can cripple your global supply chain. Be careful about the kind of arrangements you enter; otherwise, it might come back to haunt you.

Environmental Risks : Environmental risks can bring a global supply chain to a screeching halt. In many instances, it may be difficult to avoid an environmental disaster. You can try to mitigate that risk, though. For example, if you are securing supplies from a factory in an earthquake zone, it's worth considering alternative sources of supplies in the event of a massive earthquake. In this instance, you can't eliminate the risk, but you can reduce the expense associated with these risks. Take the example of the 2012 floods in Thailand.

HDD Pricewatch: Three Months Into the Thai Floods

	Before	Current
Seagate Barracuda XT 3TB	\$179.99	\$429.99
Seagate Barracuda XT 2TB	\$129.99	\$239.99
Seagate Barracuda Green 2TB	\$79.99	\$129.99
Western Digital Caviar Black 2TB	\$139.99	\$249.99

[4 more rows](#) • Feb 7, 2012

You might not be aware that Thailand is one of the global production hubs for hard drives. Immediately after the floods that hit the region around greater Bangkok, the price of hard drives skyrocketed.

The scarcity caused by the flooding of factories impacted the global price of hard drives. It would have also impacted any company reliant on hard drives sourced from this region in their global supply chain. Hopefully, this example illustrates the importance of creating backup plans when considering your global supply chain management.

Cyber Attacks : Increased digitization and connectivity have made global supply chains vulnerable to hackers and cyber-attacks. These cyberattacks have a detrimental effect on the running of the business. Case-in-point ASCO Industries: ransomware attacks forced the Belgian Aerospace supplier to close down four of its factories across North America and Europe.

The attack led to a shutdown of the company for more than a month and the furlough of more than 1,000 workers. Global supply chains are even more susceptible to cyber threats, including counterfeits, unauthorized manufacture, theft, and malicious software and hardware insertion.

Catastrophes : Who would have thought that a pandemic would ravage the world in 2020 and change the way we live and work? Well, such catastrophes do happen, and they upend the global supply chains.

The coronavirus outbreak led to lockdowns across the world, particularly between March and September 2020. As a result, trade routes were closed, and shipments were delayed or ceased for a significant period. Even in 2021, we have still not recovered from the shockwaves the virus sent around the world's supply chain.

What Are the Benefits of Effective Global Supply Chain Management

While there are dangers associated with managing a global supply chain, there are also major benefits. Effective supply chain management, at its core, is about maximizing company profits by optimizing the way you produce products and bring them to market.

Effective supply chain management helps to reduce overhead and operational costs. For example, the ability to correctly predict demand ensures that you don't store slow-moving inventory, and you can reduce warehouse fulfillment costs.

When you run your global supply chain effectively, you'll reduce waste and cut out inefficiencies from your system. Reducing inefficiencies can help speed up the route to market. Or, it might involve cutting down the cost of sourcing, production, or shipment. You can also reduce risks associated with your supply chain.

Keep in mind, effective global supply chain management might result in an increase in costs, but an improved product for your customers. Alternatively, there might be a slight increase in cost, but more reliable shipment.

Fundamentally, the benefits of an effective global supply chain market revolve around ensuring your customers get the best product at a competitive price while providing your company with a healthy profit margin. How you achieve those goals will depend on your unique supply chain and your company's objectives.

Important Partners in a Successful Global Supply Chain: International commerce involves a number of important actors. There are a variety of intermediaries you might need to rely on for your global supply chain to operate effectively. Let's look at some of the crucial partners involved in global supply chains.

Freight Forwarders : Commonly known as foreign

freight forwarders or simply forwarders, freight forwarders are companies that organize shipments from the manufacturer to the market, customer, or final distribution point. Most freight forwarders will offer various transport channels, including sea/ocean freight, rail freight, road transport, and air freight shipment.

Freight forwarders perform a number of important roles, including:

- Quoting carrier rates.
- Arranging charters or booking vessel space.
- Preparing and presenting documents.
- Obtaining insurance.
- Handling payments.
- Translating.
- Tracing and expediting shipments.
- Arranging inland transportation.

In the United States, freight forwarders are regulated by the Federal Maritime Commission. However, it is the U.S. National Customs Brokers and Forwarders Association that certifies forwarders.

NVOCCs : Non-Vessel Operating Common Carriers (NVOCCs) do not own or run vessels. However, they buy space on vessels and sell to their customers at competitive rates. An NVOCC will issue its own Bill of Lading. The Bill of Lading is a contract issued by the NVOCC and serves as a contract of carriage.

NVOCCs are an excellent and cost-effective alternative to carriers. They are often described as shippers to carriers and carriers to shippers.

Consolidators : Consolidators, otherwise known as groupage operators, help businesses to transport Less than Container Load (LCL) shipments. They combine many small shipments from separate customers. Although consolidators are distinct from NVOCCs, they usually work hand-in-hand. For small and medium-sized businesses, it can be difficult entering foreign markets. They do not have the same budget and resources that a transnational company or a multinational can command.

Customs House Brokers : Getting your product to a country is only one step in the global supply chain.

Passing through customs and clearing them is the next, and depending on the country, can be the more tricky stage.

A customs house broker is an intermediary between an importer or manufacturer and the customs department of a government. They ensure that your papers are in order so you won't have any run-in with the law. Also, they make payments on behalf of their clients under a power of attorney. Custom house brokers often work with other players in the value chain like forwarders to ensure your shipment is on track.

EMC's and ETC's : Export Management Companies (EMCs) provide consultancy services to exporters. A good EMC will have special knowledge and expertise as well as connections to help businesses navigate national bureaucratic procedures. EMCs are typically abreast with local customs and government regulations.

Export Trading Companies (ETCs), on the other hand, provide actual transport services. They perform a wide range of roles, including:

- Finding importers to buy the shipped goods
- Ensuring compliance with all shipping rules and regulations
- Coordinating export arrangements
- Ensuring all paperwork and documentation is on point
- Arranging transportation over the sea and inland

Both an EMC and an ETC can be of invaluable service to a company managing a global supply chain. They can be especially useful for smaller companies, or firms looking to establish operations in a new country.

Shipping Associations : Shippers associations exist to help businesses ship products cheaply and efficiently by motor carriers, railroads, air carriers, or ocean carriers. Usually formed by a band of small exporters, shipping associations are often non-profits that collectively ship their member's products at a discount.

A shipping association can pool large volumes of shipments together. This move usually helps them to secure significant shipping discounts for members.

The best way to find a suitable shipping association is to contact the relevant trade association for your industry. Alternatively,

Ship Brokers & Ship Agents : Shipbrokers help exporters find the right ships to carry their cargo. Although shipbrokers are independent contractors, they usually have information on the schedule of ships in a port. So, when your cargo is ready, they'll connect you with an available ship that has the capacity for your cargo.

Ship agents, unlike shipbrokers, work for carriers. A ship agent arranges for a ship's arrival, berthing, and clearance. Ship agents also coordinate unloading, loading, as well as fee payment.

Export Packing Companies : Export packing companies help you prepare your cargo for long journeys. Packaging of your goods is important for a number of reasons. First, a product that's properly packaged will move through customs faster. For example, in certain countries, the import duty you pay is dependent on not just the weight of your cargo but the packaging as well.

Specialized packaging will also ensure that your product is able to endure rough handling and harsh climates, and arrives at its destination undamaged. That can reduce the cost of returns. Finally, carefully packaged goods, that are properly itemized, can be unloaded quickly. That can reduce the work for the people receiving the goods.

Redefining Strategic Alliances :

This guide provided you with an overview of global supply chain management. We looked at some of the benefits and risks associated with managing a global supply chain. We also looked at some of the primary actors involved in global supply chains.

To run an effective supply chain, you'll need to source suitable materials and build relationships with partners. Those bridges you will build with your allies will pay dividends in the long term. Of course, identifying suitable partners and suppliers will take time. There are risks that can cost your business if things go wrong.

Source: Fastbolt



WTO UPDATE : WTO OFFERS UNIQUE FORUM FOR DIALOGUE ON GLOBAL SUPPLY CHAIN ISSUES

— DG OKONJO-IWEALA

The 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 2022.

WTO offers unique forum for dialogue on global supply chain issues — DG Okonjo-Iweala

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 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

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BRANCH NEWS

BANGALORE BRANCH

Supply Chain Logistics Exposition (SCALE 2022) : IIMM Bangalore Branch hosted Signature event of SCALE 2022 (Supply Chain Logistics Exposition - 22nd Edition) on 17th September 2022 at Hotel Chancery, Bangalore.

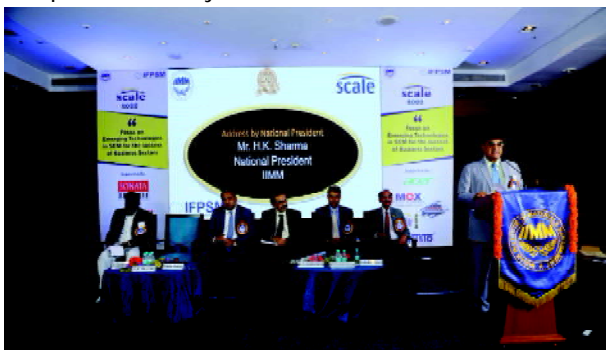
Theme was: "Focus on Emerging Technologies in SCM for the success of Business Sectors"



SCALE 2022: Mr. H.K. Sharma, NP, IIMM, Lighting the Lamp

The Sessions started with the MC, Mr. Paul George inviting the guests to take their seats on the dais. M/s Kushi S Rao rendered a beautiful invocation and the guests started the proceedings by lighting the lamp.

Mr. P. M. Biddappa, Scale Chairman welcomed the gathering and gave an overview of Scale journey from inception till today.



Mr. H.K. Sharma, NP, IIMM Addressing the Gathering

Mr. H.K. Sharma, National President covered all technologies being used and emerging like IOT, AI/ML, VR/AR, Block Chain etc. He also reiterated the use of these emerging technologies in SCM.

Mr. Bobby Simon, President Synergia Group in his keynote address, talked about risk management and how to convert risk into opportunity.



Mr. Nitin Kumar Sharma, Chief Guest Addressing the Gathering

Mr. Nitin Kumar Sharma, Director: Procurement made the Chief Guest address to the gathering. He gave few examples as how to approach, manufacturing Watch or jewellery, electric car or bike to understand the concept.

Mr. MS Venkatesh, Executive Director HAL, the Guest of Honour, talked about GEM and SCM.

All the speakers were facilitated with Boquete and Memento.

Mr. H.K. Sharma, National President – IIMM, gave medals to Mr. Biddappa and Mr. Sengottaiyan for their effective organization to the success of SCALE event.



Mr. Bobby Simon, President Synergia Group, Key note Speaker addressing the gathering

The technical sessions started after the break.

Mr. Devarajan S, Senior VP TVS Motors spoke about use of technologies in automotive industry. He said that only expectations change over time while keeping the customer constant. He talked about evolution of industrial revolution to 4.0, Digital manufacturing, Additive Manufacturing, Advances in automation etc. He brought about the importance of paradigm shift in management skills in this VUCA World.

Ms Dharani Jayaprakasam, Chief Transformation Leader

IBM, talked about the exponential technologies being used by SCM professional across S2P (source to Pay)

Mr. Shri Vishnu of Bosch brought about the importance of Technologies in manufacturing.



Mr.KN Subramanya Principal RVCE, Speaker Addressing the gathering

Mr.KN Subramanya Principal RVCE gave an elaborate view of Digital transformation in Logistics. Some of the essential applications of Logistics 4.0 in resources planning, WMS, Transportation Management Systems, Block Chain, Cloud Technology, IOT, AR etc were Discussed. RVCE students' capability is showcased in their Centre of Excellence. He ended with a video on design of Traffic Flows.

Dr. Vishwas Ramdas Puttige, Business Head AMACE solutions clarified how Additive Manufacturing shall reduce the inventory carrying cost substantially. He talked about AM technologies, Materials used for AM, Metal AM, On Demand AM, Transformation of component industry, Mass Customization etc. He also discussed some case studies.

Mr. Sudhir Verma, Sr.DGM Power Build talked about the manufacturing capability of power build in geared motors and gear boxes, its product range. He presented the images of World class Manufacturing at their plants.

Mr. Yogindara PG, Retd. Executive Director gave an overview of use of technologies in Aircraft industry. He showed videos of Additive manufacturing and Robotic Drilling being used in their industry.

Dr. Jay Bharatheesh Simha, Head Technology innovation Vertex star, expressed his view t about the importance of AI as well as Haman intelligence. AI components and processes were discussed in detail. The importance of adoptive intelligence and Supply Chain Metrics was stressed.

Mr. Ramanatahn Subramaniam, Head IT Solutions JDL spoke on Business Excellence. He emphasised that 5Ds namely Define, Design, Develop, Deploy, Discovery are required for technology implementations or we will end in 6th D which is a Disaster.

Mr. Madan sapmath Chief SCM officer HCG narrated the journey of automation in every area of Health care. The topmost importance shall be given to patients in accessing their history and treatment by use of emerging technology tools



Mr SwayambuVP south IIMM released the Souvenir-SCALE 2022 17.09.2022

Mr SwayambuVP south IIMM released the Souvenir. He gave a presentation on forthcoming event NATCOM at Chennai. He invited all SCM professional to join the conference at Chennai.

Dr. Manohar C.Regional President, Indo American Chamber of Commerce and Chairman of Vision Group, started the panel discussion with a small talk on importance of emerging technologies specifically in Health care, Education, Automotive and Banking. He asked each panellist to express their view first followed by a second round.

Mr. Praveen Trivedi, COO TVS talked about the various technologies being used in automotive industry. He opined that E-Vehicles may not be a permanent solution for reducing carbon foot print

Mr. Gaurav Arora gave the importance of technologies in Health care Sector.

Ms. Dr. Bhargavi, Director Seshadripuram College brought about the importance in Education.

Mr. D Murugesan, Retired Chief Manager Canara Bank talked about currencies, Exchange rates, Import & Exports.



A View of Power Panel Session – SCALE 2022 on 17.09.2022

Mr. Manohar C.gave a second round to all panellist for their opinion and opened the forum to delegates. Queries of delegates were answers to the satisfaction of the audience. Mr. Manohar concluded the

session with a story to emphasize the importance of innovation.

The announcement for Prof Ravi Ravindran endowment lecture was made.

Dr. Sengottaiyan, Branch Chairman proposed the Vote of thanks. Dr. Sengottaiyan, Branch Chairman handed over a memento to Silver Sponsor Sonata Software, Received by Purushotham M.S, Senior Manager

He acknowledged the grand success of SCALE 2022 by awarding a Memento to Mr. Biddappa.

26th August 2022 – Industry Visit: IIMM Team visited to ACER India Met **Mr. Harish Kohli, President & Managing Director**, discussed regarding Educational Courses, Membership for Acer India Employees and also discussed regarding signature event SCALE 2022 and asked for Sponsorship, Advertisement and nominating Delegates.

2nd September 2022 – CEO-CPO Meet: IIMM Bangalore Branch organised a CEO-CPO meet as SCALE 2022 curtain raiser program on 2nd September 2022 at The Karnataka Billiards Association, Bangalore. Dr. P. Sengottaiyan, Branch Chairman welcomed the gathering and presented about IIMM. Mr. P.M. Biddappa, Chairman, SCALE 2022 presented on SCALE journey. CEO-CPO Meet started with a talk on "Focus on Emerging Technologies in SCM for the success of Business Sectors" by Dr. Jay B. Simha, Head -Technology Innovation, Vertex Star. He spoke on "Artificial Intelligence in Supply Chain for Profits" and he well explained how various technological interventions like RFID, Robotics, Artificial Intelligence, Machine Learning need for accelerated adoption to technology in the current Supply Chain Business Models, will drive the future.

Proceedings continued with the CEO-CPO – Power Panel discussion on "**Focus on Emerging Technologies in SCM for the success of Business Sectors**" Moderated by Mr. Paul George, National Council Member. The panellists **Dr. Aditya Gupta**- IIM Bangalore, **Dr. C. Manohar**, Regional President, Indo American Chamber of Commerce and Chairman of Vision Group, Association of Indian Management Schools, **Dr. K.N. Subramanya**, Principal, RVCE, Bangalore, **Mr. Siva Rama Chandran**, VP and Asia Pacific – Genpact, and **Mr. Amith Mahajan**, Sr. Director and Held Procurement, Manipal Health Enterprises. About 40 CEO-CPOs attended the meeting and it was an excellent interactive and productive event.

5th September 2022: Teachers day celebration: To commemorate Teachers Day, a Faculty meeting was organised on 5th September 2022 at IIMM Conference Hall. Faculty Members and EC Members attended the program. Mr. T.S. Balachandran, National Council Member and Senior Faculty welcomed them with a Bouquet and Invited Faculty and EC Members to share their experiences. Dr. C. Subbakrishna, Past National President and Senior Faculty and other faculties shared their views and suggestions.

12th September 2022: Visit to Banking Sectors : IIMM Team visited to Canara Bank, met Mr. Kannan General Manager, discussed regarding Educational Courses,

Membership and also discussed regarding signature event SCALE 2022.

16th September 2022 – National President Visit : Mr. H.K. Sharma, National President, IIMM visited IIMM Bangalore Branch on 16th September 2022. All committee members welcomed National President into IIMM Bangalore Branch, interacted with him regarding educational and professional activities of IIMM. Mr. H.K. Sharma, NP addressed the committee members. Executive Committee of IIMM Bangalore Branch, honored and felicitated the National President, with a Mysore Peta, shawl and memento.

VADODARA BRANCH

59th ANNUAL GENERAL MEETING (AGM) ON 28th AUGUST 2022 AT HOTEL GRAND MERCURE, SURYA PALACE,

The 59th AGM of Vadodara branch was organized on



28th August 2022 at Hotel Grand Mercure Surya Palace wherein Statement of Accounts to consider Audited Income / Expenditure Account & Balance Sheet for 2021-2023 had been presented without any queries received from members. Balance Sheet was approved by members present. The Motion was Proposed by Mr. M D Makwana and Seconded by Mr. Vinubhai Amin.

The Auditors Chandabhoy & Jassoobhoy for ensuing year 2022-2023 were finalized. The Motion was Proposed by Mr. D M Kapadia and was Seconded by Mr. K K Shah.

After the AGM activities, the main function started with Lighting of Lamp and a 2 minute silence was observed for our Late Member's departed souls.

Dr. Bharti Trivedi, Our Chairperson started her address and went through the Branch Activity that has taken place in the last financial year. The Branch activities were explained to the members in depth giving them month by month details of the things done at Branch and she was also very hopeful of the things that are going to change after this pandemic.

Mr. Lalbhai Patel, Our Former National President addressed the gathering and appreciated Vadodara Branch Chairperson, EC Members as well as Staff for making sincere efforts to make this event a grand

success. He also remembered the contribution made by Late Shri R J Sarvaiya and Sushilaba as well as Mr. A P Singh, Mr. H M Bhatt and Mr. R A Patel for the growth and development of IIMM Vadodara Branch. In his address, he also mentioned about Shri K C Joshi and his devotion for the institute at the age of 87.

Mr. Lalbhai Patel also gave a brief of IIMM / IFPSM Professional competitions such as Matquiz, IIMM Idol and YMM (Young Materials Managers) competitions. He also stressed upon increase in Membership strength and asked all Young SCM Professionals to take IIMM Membership.

Mr. Malay Mazumdar, Our Immediate Past President also stressed upon the need to work hard to take the Institution forward by so as to take this Branch to number one position. He requested the existing members to promote the cause of IIMM and bring in new members to Join IIMM.

He thanks Mr. Vinay Kumar (Past Chairman IIMM Vadodara Branch) for inducting him in Branch EC and Mr. L.P. Patel (Past national President) for mentoring him to rise in the IIMM hierarchy and become national President. He further underlined significance of Material function and stressed upon the fact that MM function is now the Profit Centre in any organization.

More than **190 persons** comprising of Members & their spouses attended AGM & appreciated the talk on topic "Best Supplier Relationship Management Initiative" by Key Note Speaker, **Mr. Prasanta Gupta – Senior VP & Head – Corporate Procurement & Engineering Stores, Aarti Industries Limited.**

Our Key Note Speaker, Mr. Prasanta Gupta stressed upon the need of Materials People coming to a common platform and how we should rethink about how the world is changing its conception with each aspect of things we do. He quoted numerous examples of once adored Vehicles like Ambassador, Fiat and the recent case of Maruti of what all things to do to remain competent enough in today's Market. He also went into depth of how the minds of the people are changing due to Education playing a vital role in one's life.

Looking into the energetics and contribution of Mr. Prasanta Gupta in the field of Supply Chain Management and Logistics and as a Life Member of the Institution felicitated him with a Citation and Shawl for the significant contribution he had done towards the growth and development of IIMM Vadodara Branch.

Felicitations of Mr. K C Joshi, Our Distinguished Member was done by Mr. Lalbhai Patel with a Bouquet and Shawl.

IIMM felicitated its new Members (27 New Members) with a rose given to each present at the hands of our existing Members giving them a feel of a home away from home.

Prize Distribution Ceremony was held to encourage our Life Members Children who have excelled in their fields by way of giving them Certificate of Merit and Medals.

IIMM Vadodara Branch also honored the dignitaries with Bouquets to Mr. Vinay Kumar, Mr. S M Takalkar, Mr. S J Desai and Mr. Anil Komat.

The programme concluded by Vote of Thanks by Mr. Rajesh Mehta our Executive Committee Member which was followed by Dinner.

NAGPUR BRANCH

REPORT OF THE WEBINAR HELD on 28th SEPTEMBER ON SCM – PROFIT ENABLER TO ORGANIZATIONS :

IIMM Nagpur Branch, held their second webinar on the 28th of September 2022, on the subject **SUPPLY CHAIN MANAGEMENT - A PROFIT ENABLER TO ORGANIZATIONS.**

The emphasis of this webinar, was primarily to highlight strategies that would maximize profits to organizations, through supply chain, in a quick and sustainable way. Product and service positioning, and its competitive advantages, for its best values on the one hand, at the same time, leveraging on SCM strategies for cost optimization on other hand, would go a long way to help in maximizing profitability in an organization. Supply chain functions, focused on better cost of acquisitions, long term inventory strategies, make or buy policies, sourcing tactics and logistics costs, with professional approach, etc., would be the leading enablers in supply chain management towards unlocking profitability.

This subject was very beautifully presented at length and highlighted with case studies, statistics by our Resource speaker, Dr Ramchandra Une, a professional and an expert in the field of Supply Chain Management. Dr Une, has a vast experience in the corporate world and has worked in some of the largest corporations, in various positions,

He is currently the Vice President Operations, Hindustan National Glass and Industries Limited. He is a Lead auditor for ISO 9001, Six Sigma Green Belt and a visiting faculty to IIMM, and other Management Institutes. He is very closely associated with the IIMM, and was the ex-Branch Chairman of Aurangabad Branch.

The webinar was attended by over 67 participants, ranging from the Supply Chain Management departments of Adani Limited, Warora and other units, IIMM members from Nagpur, and other branches, as well as senior personnel from industries in and around Nagpur. The webinar was an interactive one and very enthusiastic participation was seen from all the participants. There was a growing interest in our series of webinar lectures, and the participants requested for more of such webinars and seminars, which IIMM Nagpur branch has planned during the year.

COCHIN BRANCH

A one-day workshop on the subject "Lean Thinking: Methods to Eliminate Waste & Optimize Wealth in your Organization" was conducted on 28th September '22

at the Renai Hotel, Cochin. The meeting was inaugurated by Mr Roy Kurian, Advisor to Govt of Kerala, Industries Dept. Mr Roy Kurian in his inaugural speech emphasized on the importance of adopting lean systems in industries in order to be more agile and competitive.



Workshop Chief guest lighting the lamp

The sessions were handled by Mr Raghunandan, Management Consultant & Technical Advisor (Past Chairman, Mysore Branch) & Mr Jacob Mathew, Corporate Trainer & Cochin Branch Chairman. Main focus of the workshop was on how to achieve Operational excellence through Lean Thinking, how this method has transformed World Class Manufacturing and how this is important in sustainable Business practices. Participants were from major PSUs in Kerala and other reputed private sector companies all over the State.



Participants Lean Thinking

The meeting started with a prayer song by our Office Manager Mr. Babu Motilal, followed by welcome speech of Mr P V Paulson, Branch Vice Chairman, where he introduced the Chief Guest and the faculties.

Chairman in his Presidential address briefly mentioned about IIMM activities especially the Consultancy works, short term & long term AICTE approved classes, upcoming 'Stores Competition' etc. He also urged the participants to join IIMM fraternity for enhancing professional knowledge & fellowship.

Hon Secretary Mr K S Shaji proposed a vote of thanks.



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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EXECUTIVE HEALTH

5 TIPS FOR A HEALTHIER 2022

Our experts share simple ways to create healthy habits for the new year.

Health is always a priority heading into a new year, but amid the COVID-19 pandemic, maintaining a healthy lifestyle is more important than ever. In a **survey** asking Americans about their 2022 New Year's resolutions, one-quarter of the respondents who were making resolutions reported that they set a goal to live healthier. With wellness so front of mind, doctors, nurses, and dietitians from NewYork-Presbyterian shared with Health Matters their tips to help create healthy habits.

1. Exercise Regularly : Staying physically fit improves cardiovascular and muscular health and helps fight disease. Exercising also has been shown to reduce **stress** and improve your overall mood, so try to squeeze in at least 150 minutes of **moderate-intensity aerobic** exercise each week, the minimum recommended by the American Heart Association, plus at least two days of muscle-strengthening activities. "Making a daily commitment to exercise, stretch, meditate, or practice any other form of self-care may help you feel calmer and allow you to reset," says Maria Biondi, RDN, CDN, a NYPBeHealthy well-being coach at NewYork-Presbyterian Queens.

Here are some simple ways to break the exercises down into 30-minute increments, courtesy of the NYPBeHealthy wellness team:

- Take at least two 30-minute walks a week at lunchtime or plan some walking meetings.
- Do 30 minutes of strength training with a kettlebell or hand weights while watching TV.
- Jump rope for 15 minutes when you get up in the morning and again when you get home at night.
- Do squats at your desk for 10-minute increments three times per day.

In the winter months, don't be afraid to **brave the cold** for your workouts. "Exercising outdoors provides all of the physical benefits that we get from indoor exercise — cardiovascular health, strength, flexibility, and endurance — but we also get many other important benefits," says **Dr. Morgan Busko**, attending physician at NewYork-Presbyterian Lawrence Hospital.

Just being in the sun increases your body's creation of vitamin D, which protects you from a host of medical problems, says Dr. Busko, who is also an assistant professor of primary care sports at Columbia University

Vagelos College of Physicians and Surgeons. And exercising outdoors may provide a special psychological boost.

"There are studies that show that exercising in nature actually increases the levels of dopamine, serotonin, and natural endorphins that are released through the body," says Dr. Busko. "If you do the same exact workout outdoors versus indoors, you're getting a bigger dose of these neuromuscular transmitters that promote a happy mood." Outdoor exercise may also provide a better workout. "When you are outdoors, you don't realize that you're tackling hills or uneven trails, as opposed to being on a machine in the gym, where you may stay at the same resistance or level of intensity for the entire the workout," says Dr. Busko.

For people who are working from home, regular movement during the work day can also help **reduce aches and pains**. "**Motion is medicine** when it comes to spine health," says **Dr. J. Ricky Singh**, director of interventional spine at **NewYork-Presbyterian Ochs** Spine and vice chair and associate professor in the Department of Rehabilitation Medicine at Weill Cornell Medicine. For example, you can add 10 squats, 10 tricep dips on a solid chair, and wall pushups to your daily routine. Also, make a point to get up from your desk two or three times an hour to walk around and do light stretching, such as back bends, which will help counter being **hunched over a computer**.

2. Eat Right : In addition to getting enough fruits, vegetables, and whole grains throughout the day, focus on protein in the morning, says **Dr. Rekha B. Kumar**, an attending endocrinologist at NewYork-Presbyterian/Weill Cornell Medical Center and an assistant professor of medicine at Weill Cornell Medicine. Packing your breakfast with protein will keep blood sugar and some "hunger hormones" more stable throughout the day, helping to control your appetite. Egg-white omelets, Greek yogurt, and protein shakes are examples. Dr. Kumar also advises **against too much sugar**, especially in the form of high fructose corn syrup. Consuming excess sugar leads to a condition called insulin resistance, which is a precursor to type 2 diabetes, a fatty liver, and cardiovascular disease. It has also been associated with cirrhosis, neuropathy, kidney disease, general inflammation, and cancer.

A diet with less red meat will lead to a host of benefits if you replace the calories with whole plant foods, says **Dr. Shilpa Ravella**, a gastroenterologist at NewYork-Presbyterian/Columbia University Irving Medical

Center and an assistant professor of medicine at Columbia University Vagelos College of Physicians and Surgeons. Your blood cholesterol levels will drop, and you'll **decrease** your risk of chronic diseases, including top killers like heart disease, cancer, stroke, diabetes, and obesity.

One easy-to-follow diet that avoids red meat is the **Mediterranean diet**, a plant-based, low-carbohydrate diet that is full of "healthy" fats like nuts and seeds and is clinically proven to decrease our risk of developing heart disease, says **Dr. Altaf Pirmohamed**, site director of cardiology at NewYork-Presbyterian Lower Manhattan Hospital and assistant professor of clinical medicine at Weill Cornell Medicine. "Focus on eating vegetables cooked in olive oil and natural spices, fruits, whole grains, and healthy fats," he says.

Dr. Alessio Pigazzi, chief of colorectal surgery at NewYork-Presbyterian/Weill Cornell Medical Center and Weill Cornell Medicine, agrees, noting the diet's benefit to **colon health** as well. What you eat can cause inflammation in your bowels and gut, and inflammation is a predisposing factor for colorectal cancer development. Researchers have identified the main food substances that cause inflammation in the body and may contribute to an increased risk of colorectal cancer: Sugar, animal fats, and red and processed meats. There isn't one specific vegetable that is a magic cure-all for a healthy colon. It's more about eating a variety of nutritious foods and focusing on a colorful, plant-based diet. "The best diet — and I'm a little bit biased because I'm Italian — is probably a Mediterranean diet on steroids," says Dr. Pigazzi. "We need to increase the consumption of fruit, vegetables, legumes, nuts, and berries and try to keep the amount of red meat and animal fats to an absolute minimum."

Need some inspiration? Check out these healthy and delicious vegetarian **soups and stews** from Emilie Berner, chef and coordinator at NewYork-Presbyterian Hudson Valley Hospital's **Chef Peter X. Kelly Teaching Kitchen**.

3. Get Enough Sleep : The COVID-19 pandemic has **disrupted** many people's sleep patterns — some have even suffered from what's known as "**coronasomnia**" — but it's critical to keep a regular sleep schedule and get about **eight hours of sleep a night**, says **Dr. Daniel Barone**, a neurologist and sleep medicine expert at the Center for Sleep Medicine at NewYork-Presbyterian/Weill Cornell Medical Center and an associate professor of neurology at Weill Cornell Medicine. "Having a strong, **healthy immune system** gives us a little more of a barrier against developing a COVID infection, so it's important to prioritize sleep," says Dr. Barone.

He suggests establishing a regular bedtime and wake-up time, avoiding caffeine later in the day, turning off electronics before bedtime, setting boundaries around your media consumption, exercising regularly, avoiding naps, cutting out alcohol, and paying attention to the possible signs of sleep apnea.

4. Protect Yourself From COVID-19 and the Flu : "Last year's flu season was mild since many people stayed isolated due to COVID," says pediatrician and immunization expert **Dr. Melissa Stockwell**, chief of the Division of Child and Adolescent Health at NewYork-Presbyterian Morgan Stanley Children's Hospital and NewYork-Presbyterian/Columbia University Irving Medical Center. "This year we are concerned it will be a more severe season." The single best way to **protect yourself from the flu and COVID-19?** Get the vaccine for both, and the **COVID booster** if you're eligible, says Dr. Stockwell. "Studies have shown that people can get **both shots** at the same time and it won't affect their antibody response."

Fortunately, the **preventive measures for COVID-19** also apply for the flu: avoiding large crowds and gatherings, **wearing a mask**, social distancing, **frequent handwashing**, and staying at home when you feel sick. "A lot of people may be coughing and sneezing, so the likelihood of transmission is much higher when you're having active symptoms," says **Dr. Ting Ting Wong**, an attending physician and infectious disease specialist at NewYork-Presbyterian Brooklyn Methodist Hospital. "These are all preventions for COVID as well as influenza transmission."

It's especially important for pregnant women to protect themselves from the flu and COVID-19 with vaccines. Not only is the **flu shot effective and safe for the baby**, says **Dr. Laura Riley**, obstetrician and gynecologist-in-chief at NewYork-Presbyterian/Weill Cornell Medical Center, but it also protects babies who are born during flu season, which runs from October through April. Flu vaccinations given to pregnant women reduce the risk of hospitalization from influenza by about 70% for infants younger than 6 months old. As for **COVID-19**: "We do have lots of epidemiologic data which suggests that pregnancy plus COVID-19 is not a good mix," says Dr. Riley. "Pregnant women have had more admissions to the ICU, more mechanical ventilation, and more deaths, although the absolute number is low. The flip side is you've got a vaccine that works to prevent severe illness."

5. Stick to Your Plan : Whether you're looking to lose weight, get in better shape, stay in better touch with family and friends, quit smoking or drinking, or have another goal in mind, there are simple strategies you can adopt to **stick with your plan**, says **Dr. Gail Saltz**, a psychoanalyst and assistant attending physician at NewYork-Presbyterian/Weill Cornell Medical Center and clinical associate professor of psychiatry at Weill Cornell Medicine. She suggests:

- Own up to what needs to be changed.
- Write out your goals and corresponding action plan in weekly parts.
- Start with a journal entry of "Why?"
- Create incentives.
- Tell someone else.

Source: healthmatters.nyp.org

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