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National Seminar on "Role of Make in India Entrepreneurs for Sustainable Growth of Steel Industries" 22nd & 23rd March 2024 - IIMM Rourkela Branch



Implementing AI in the Supply Chains: Challenges and Solutions

Data Quality & Availability Infrastructure & Technology

Vendor Choice & Collaboration

National Seminar organized by IIMM Rourkela Branch



Lighting of Lamp by National President Shri Lalit Raj Meena



National President Sri Lalit Raj Meena, addressed two days Seminar Conducted by IIMM Rourkela Branch, on Make in India startup for Steel Industries at SAIL Rourkela Odisha on 22/3/2024

Raibareli and Kanpur Branch Jointly organized One Day Seminar on -De-coding GeM and its Role in Empowerment of MSMEs



From the Desk of National President & Editor in Chief



Dear Readers,

The emerging new technologies in the field of Logistics and supply chain are creating strategic opportunities for Business Entities to build that extra

advantage over its competitors to stay ahead. Logistics and Supply Chain Sector in India will continue to grow on the back of Strong Domestic Demand, Foreign Direct Investments, booming E-Commerce, Infrastructural Development and Policy Reforms etc.

Supply chain operations become faster, greener, and more localized in 2024. Newtechnologies like AI and machine learning will enable risksand quality control in the supply chain.predictive, efficient operations. Today, AI can be harnessed to analyze historical data, market conditions, weather patterns and geopolitical events, among other data sources, to identify potential supply chain

Real-time AI that can analyze and act on data as it comes in, andsharing across the supply chain is a fundamental part of achieving efficiency. Integration of various factors along the chain, is key to an efficient supply chain because it simplifies internal communication, processes and services required surrounding inventory management, transportation, warehousing and other supply chain components.

Both the B2B and B2C markets, require visibility at every stage in the supply chain. This requires a technological solution, which is more efficient and sophisticated than just sending a mass email. This has led to many new mobile and cloud based options for increasing efficiency within distribution centers and warehouses.

Cloud Technology along with Internet of Things have made it exponentially faster to gather data from various sources and analyses it on daily basis to give important information to Business Owners to take better decisions. Another advantage of Cloud Computing is reduced costs on IT personnel and Infrastructure.

New advancements in the Logistics Industry like Drone Delivery and Driverless cars will make it even more economical and cost competitive.

Technological Innovation plays an important role in enhancing business competitiveness and performance by improving the overall effectiveness and efficiency of the logistics system. In logistics, information, communication and automation technologies has substantially increased speed of identification, data gathering, processing, analysis and transmission, with high level of accuracy and reliability.

Best regards,

LALIT RAJ MEENA NATIONAL PRESIDENT mmr@iimm.org



Chief Editor & Publisher Lalit Raj Meena, National President

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Desk Editor : O. P. Longia Former National President-IIMM

National President : Lalit Raj Meena, np@iimm.org

Editors : P. M. Bidappa Sr.VP srvp@iimm.org R. K. Rastogi, NS&T nst@iimm.org Sukumar Adhikari, VP Central vpcentral@iimm.org Pankaj Panchbhai, VP West vpwest@iimm.org G.K. Agnihotri, VP North vpnorth@iimm.org T.A. Roby, VP South- vpsouth@iimm.org Rana Das, VP East - vpeast@iimm.org Prof.(Dr.) V.K.Gupta-IMT Ghaziabad Prof.(Dr.) Goutam Sen Gupta, Vice Chancellor-Techno India University

Correspondence : MATERIALS MANAGEMENT REVIEW

Indian Institute of Materials Management

4598/12 B, Ist Floor, Ansari Road, Darya Ganj, New Delhi - 110 002. Phones : 011-43615373 E-mail: mmr@iimm.org Website : www.iimm.org

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4598/12 B, Ist Floor, Ansari Road, Darya Ganj, New Delhi - 110 002. Phones : 011-43615373 Fax: 91-11-43575373 E-mail: mmr@iimm.org Website : www.iimm.org

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SUPPLY CHAIN MANAGEMENT (SCM) vs. INDIAN KNOWLEDGE SYSTEM (IKS) KULDIP RAI, B.SC.(EE), M.TECH, MBA, FIETE, FIE, PAST CHAIRMAN, IIMM, HYDERABAD BRANCH Kuldip.Rai@gmail.com



The INDIAN KNOWLEDGE SYSTEM (IKS) is a term that refers to the diverse and rich traditions of knowledge, wisdom, and culture that have originated and developed in India over thousands of years. It encompasses various fields of inquiry, such as philosophy, logic, mathematics, astronomy, medicine, arts, architecture, and more. It also reflects the holistic and integrated worldview of the Indian civilization, which seeks to harmonize the human, natural, and divine realms.

Supply Chain Management vs. Indian Knowledge System : The IKS is not a monolithic or static entity, but rather a dynamic and evolving one, that has been influenced by and has influenced other cultures and regions. It is also not confined to ancient texts or scriptures, but is a living and continuing tradition that is practiced and transmitted by various communities, institutions, and individuals. The IKS is a valuable source of inspiration, innovation, and insight for the contemporary world, as it offers solutions to some of the most pressing challenges of our times. Some of the salient features of the IKS are: It is based on the principle of anubhava or direct experience, which is the highest form of evidence and validation. It also employs rigorous methods of observation, experimentation, analysis, and inference, as well as intuition, creativity,

and revelation. It is characterized by synthesis, which means that it does not separate knowledge into rigid categories or domains, but rather integrates and connects different aspects of reality. It also recognizes the unity and diversity of existence, and the multiple levels and dimensions of reality. It is guided by the purusharthas or the four-fold aims of human life, which are dharma (righteousness), artha (wealth), kama (pleasure), and moksha (liberation). It also emphasizes the ethical, moral, and spiritual aspects of knowledge, and its application for the welfare of all beings. It is rooted in the sanskriti or the culture of India, which is a complex and dynamic phenomenon that reflects the history, geography, language, literature, art, religion, and values of the Indian people. It also respects and celebrates the diversity and plurality of cultures, traditions, and perspectives within and outside India.

• IKS is thus a term that refers to the diverse and rich traditions of knowledge, wisdom, and culture that have originated and developed in India over thousands of years. It encompasses various fields of inquiry, such as philosophy, logic, mathematics, astronomy, medicine, arts, architecture, and more.SCM is a collective effort by suppliers to develop a centralized management system for the flow of goods and services. It includes efficient and economical processes that transform raw materials into finished products. In order to optimize the flow of goods and services from the source to the customer and to harmonize the human, natural, and divine realms it covers the entire supply chain operation or a specific aspect, such as a campaign, a channel, or a process and covers various aspects of reality, such as philosophy, metaphysics, mathematics, science, art, and beyond. Based on the principle of data and information, which are the primary forms of evidence and validation, it also employs rigorous methods of observation, experimentation, analysis, and inference, characterized by specialization and differentiation, which means that it separates knowledge into rigid categories or domains. It also recognizes the complexity and uncertainty of existence, and the multiple factors and variables that affect reality, quality, and customer satisfaction criteria, which are the main measures of performance and success. It also emphasizes the efficiency, effectiveness, and innovation aspects of knowledge, and its application for the competitive advantage of the business.SCM is influenced by the global and local market forces, which are constantly changing and evolving phenomena that affect the

demand, supply, price, and quality of goods and services. It also adapts and responds to the diversity and complexity of cultures, traditions, and perspectives within and outside the supply chain. We need to draw conclusions and implications from comparison and contrast, and suggest some areas for further research or exploration. IKS can be applied to modern business practices in various ways, such as: • Enhancing the creativity and innovation of businesses by drawing from the rich and diverse traditions of IKS, such as Ayurveda, Acupuncture, Yoga, etc. These traditions can offer novel solutions to the problems and challenges faced by modern businesses, as well as new opportunities for growth and development.. Improving the sustainability and social responsibility of businesses by adopting the ethical and holistic principles of IKS, such as the purusharthas, the panchamahabhutas, the law of karma, etc. These principles can help businesses to balance their economic, environmental, and social objectives, and to contribute to the welfare of all beings. • Strengthening the cultural and competitive advantage of businesses by leveraging the sanskriti and the interdisciplinarity of IKS, such as the languages, literatures, arts, architectures, sciences, etc. These aspects can help businesses to differentiate themselves from their rivals, and to appeal to the diverse and complex needs and preferences of their customers. Integrating SCM and IKS in the context of the Indian economy and society can have challenges. Some of the possible challenges are:MSKS stands for Modern Scientific Knowledge System, which is a collective term for the knowledge and methods that are based on data, information, and rationality. The context of MSKS in SCM and IKS is that they are different ways of understanding and managing the flow of goods and services from the source to the customer. SCM is influenced by the global and local market forces, and it uses MSKS to optimize the efficiency, effectiveness, and innovation of the supply chain operation. MSKS is often contrasted with IKS, which is indigenous knowledge system, which is a term that refers to the diverse and rich traditions of knowledge, wisdom, and culture that have originated and developed in various cultures. It can create conflicts and tensions between the MSKS and the IKS, as they may have different assumptions, methods, and values. It may also require a paradigm shift and a cultural change for both the MSKS and the IKS practitioners to appreciate and respect each other's contributions and perspectives. IKS is rooted in the culture and worldview of the indigenous people, and it uses their own methods and principles to harmonize the human, natural, and divine realms. IKS can offer novel solutions and insights to the problems and challenges faced by modern businesses, as well as new opportunities for growth and development. IKS can also enhance the sustainability and social responsibility of businesses by adopting the ethical and holistic principles of IKS. Integrating MSKS and IKS in SCM can have both benefits and challenges, as they may have

different assumptions, methods, and values. It may also

require a paradigm shift and a cultural change for both the MSKS and the IKS practitioners to appreciate and respect each other's contributions and perspectives. It can pose difficulties and risks in validating, standardizing, and protecting the IKS, as they may not fit into the existing frameworks and regulations of the MSKS. It may also expose the IKS to exploitation, appropriation, and distortion by external parties. It can demand a high level of collaboration and coordination among various stakeholders, such as the Government, the academia, the industry, the civil society, and the indigenous communities. It may also require a lot of resources and efforts to bridge the gaps and build the capacities of the stakeholders involved.

Some examples of successful integration of MSKS and IKS in SCM are:

- The development of appropriate technologies that address the basic needs of rural communities, such as water, sanitation, and agriculture, by using the indigenous knowledge systems of India and China. These technologies are based on the principles of anubhava, interdisciplinarity, ethics, and culture of IKS, and are validated and optimized by the methods of data, information, and rationality of MSKS.
- The implementation of sustainable and socially responsible practices by businesses that adopt the ethical and holistic principles of IKS, such as the purusharthas, the panchamahabhutas, and the law of karma. These practices help businesses to balance their economic, environmental, and social objectives, and to contribute to the welfare of all beings. They also use the MSKS to measure and improve their performance and success criteria, such as profit, cost, quality, and customer satisfaction.
- The enhancement of creativity and innovation by businesses that leverage the sanskriti and the interdisciplinarity of IKS, such as the languages, literatures, arts, architectures, sciences, etc. These aspects help businesses to differentiate themselves from their rivals, and to appeal to the diverse and complex needs and preferences of their customers. They also use the MSKS to optimize the efficiency, effectiveness, and innovation of their supply chain operations.

Businesses can measure the success of their integration efforts by using various key performance indicators (KPIs) and metrics that reflect their objectives and goals. Some of the common KPIs and metrics for supply chain integration are:

 Profitability: This measures the net income or return on investment of the supply chain operation; calculated by subtracting the total costs from the total revenues, or by dividing the net income by the invested capital.

- Total sales: This measures the amount of revenue generated by the supply chain operation; calculated by multiplying the number of units sold by the average selling price, or by adding up the sales from different channels or regions.
- Decision response time: This measures the time required to make and implement key decisions throughout the chain; calculated by tracking the elapsed time from the occurrence of an event or a trigger to the execution of an action or a response.
- Return on assets: This measures the efficiency of the supply chain operation in using its assets to generate income; calculated by dividing the net income by the total assets, or by comparing the asset turnover ratio with the profit margin ratio.
- Technology: This measures the status of and ability to deploy value-enhancing technologies throughout the chain; calculated by assessing the adoption rate, the utilization rate, and the impact rate of various technologies, such as cloud computing, artificial intelligence, blockchain, etc.
- Product development time: This measures the elapsed time from concept through initial delivery of a new product or service. It can be calculated by tracking the duration of each stage of the product development process, such as ideation, design, testing, launch, etc.

- Shared risk: This measures the extent of risk minimization and sharing throughout the chain; calculated by identifying the potential sources and impacts of risk, such as demand uncertainty, supply disruption, quality issues, etc., and by evaluating the mitigation strategies and contingency plans in place.
- Customer Support- All the activities relating to customer support starting from receipt of customer complaint on the toll free number, tolled number, mobile app, email or any chat platform shall be attended to promptly as this is not a profit making activity but an investment towards marketing support. The complaint shall be responded to most urgently, preferably taking the help of Machine Learning and Artificial Intelligence and resolved most expeditiously to the utmost satisfaction of the customer as this guarantees repeat orders.

Balancing the economic, environmental, and social objectives in supply chain management (SCM) is a challenging but important task for businesses that want to achieve sustainability and competitiveness. According to the triple bottom line framework, businesses should consider not only the financial performance, but also the environmental impact and the social responsibility of their supply chain operations. Streamlined procedures must be evolved and implemented with respect to returns and refunds.



5 CHALLENGES IN THE MANUFACTURING INDUSTRY IN 2024

The manufacturing industry is undergoing a profound transformation in 2024, marked by the rapid advancement of Industry 4.0 technologies, unprecedented supply chain disruptions, and critical workforce shortages. To thrive in this dynamic environment, manufacturers must navigate through a myriad of challenges in the manufacturing industry.

1. Industry 4.0 Transformation : Industry 4.0, characterized by the fusion of digital technologies with traditional manufacturing processes, presents both opportunities and challenges. To leverage the benefits of automation, artificial intelligence, and the Internet of Things (IoT), manufacturers must embrace digital transformation strategies.

Implement predictive maintenance systems to optimize equipment performance and minimize downtime.

- Integrate AI-driven analytics to enhance decision-making processes and improve operational efficiency.
- Invest in employee training programs to equip workers with the skills needed to operate and maintain advanced technologies.

2. Supply Chain Disruptions : This is the major challenges in the manufacturing industry. The COVID-19 pandemic exposed vulnerabilities in global supply chains, exacerbating existing challenges such as geopolitical tensions and natural disasters. To mitigate the impact of disruptions, manufacturers must adopt agile and resilient supply chain strategies.

3. Technology Integration Challenges : Integrating new technologies into existing manufacturing processes is a complex endeavor that requires careful planning and execution. Manufacturers must

overcome compatibility issues, legacy systems, and cultural resistance to drive successful digital transformations.

- Conduct comprehensive assessments of existing infrastructure and capabilities to identify potential integration challenges.
- Prioritize investments in interoperable technologies and scalable solutions to facilitate seamless integration.
- Foster a culture of innovation and collaboration to encourage experimentation and adoption of new technologies.

4. Workforce Shortages: The manufacturing industry is facing a shortage of skilled workers, driven by factors such as an aging workforce, demographic shifts, and inadequate training programs. To address this challenge, manufacturers must invest in talent development initiatives and adopt strategies to attract and retain top talent.

- Partner with educational institutions and vocational training programs to develop tailored workforce development initiatives.
- Offer competitive wages, benefits, and career advancement opportunities to attract and retain skilled workers.
- Embrace diversity and inclusion initiatives to create a more inclusive and equitable workplace culture.

5. Some Other Challenges:

Labour Shortage : As Baby Boomers leave the workforce and openings made conceivable by innovation fuel development, it's normal that about 4.6 million assembling occupations will wind up accessible throughout the following decade - and almost 2.4 million are relied upon to go unfilled. Today, 6 out of 10 open talented generation positions are unfilled. While mechanization and mechanical technology may help fill the work hole, talented specialists will, in any case, be expected to apply critical thinking abilities, perform investigation and oversee creation. One reason makers are thinking that its hard to fill positions, both talented and incompetent, is the absence of exchange school open doors for young fellows and ladies. To tackle this issue, numerous producers are creating powerful preparing projects to show hopefuls everything from the pass on making and welding to mechanical technology programming and sheet rolling.

Cybersecurity : As technology propels, so do the endeavors and abilities of cybercriminals. While

ransomware was previously the most widely recognized type of cybercrime, following quite a while of wild development it's been overwhelmed by two "new" dangers: banking trojans and crypto miners. Most producers are depending on obsolete security frameworks unequipped for tending to the number and intricacy of dangers today, leaving huge numbers of them helpless against exorbitant ruptures. Organizations need to utilize increasingly refined methods for verifying their systems, as the customary firewall approach may not be satisfactory to shield programmers from getting to them and doing genuine harm.

Global Competition : Today, as per the Global Manufacturing Competitiveness Index, the U.S. does not hold the top spot as the world's most aggressive economy; China has that respect, however, it's normal that we'll take that spot by 2020. What it will take to get and hold that spot, as indicated by a report by Deloitte, The Future of Manufacturing, are cutting edge innovations and ability – with ability being viewed as the top driver for intensity.

The report recommends that for makers to be aggressive later on, they should move creation to a higher esteem, cutting edge innovation items and procedures, to some degree to dodge value wars, and to a limited extent to make it conceivable to offer the new item as an administration and administration based estimating models.

Qualified Leads: Traditional marketing endeavours for producers are demonstrating far less successful than previously; expos, exchange advertisements and cold calls aren't working like they used to. In the computerized age, associations need to accomplish more than set up a site and expectation that their best prospects will unearth it. Modern B2B advertisers need to try to be found naturally through online inquiries and give an abundance of data that shows importance and mastery. That implies they have to use inbound promoting and SEO strategies by making content that gives answers to potential clients' inquiries and issues.

In conclusion, the manufacturing industry of 2024 is facing unprecedented challenges that require innovative solutions and strategic foresight. By embracing digital transformation, fostering resilience in supply chains, overcoming technology integration barriers, and investing in talent development, manufacturers can position themselves for success in an increasingly competitive and volatile landscape.

Source: cioviews.com





TRANSFORMATION OF SUPPLY CHAIN THROUGH AI

MS SUVARNA SUDAGONI, NC MEMBER, IIMM HYDERABAD BRANCH, SSUVARNA08@GMAIL.COM

I: The Science of Human-like Machines : Artificial intelligence (AI) is the science of making machines think and act like humans. The supply chain disruption is everywhere, which forcing most of companies to transform their supply chain network to drive resiliency, relevancy and responsibility.

The success of these efforts hints to putting data at the core of the supply chain and applying AI to it to create a connected and truly intelligent supply chain.

New Demands in Supply Chain : Presently, there is a significant pressure on organisations' supply chains to address various new challenges and priorities that existing supply chain capabilities are not sufficient to handle them.

Most existing supply chains were built for a different time, when scale was achieved by delivering truckloads of goods all together to warehouses and then big-box stores. This model relied on a high level of demand predictability. That time visibility was less important and valued efficiency over resiliency. With supply chain disruption everywhere, the traditional type of this model must undergo suitable changes—??



Majority of the large and medium scale companies that can put data at the core of their supply chain and apply AI at scale can create a connected and truly intelligent supply chain network.

This approach of An intelligent supply chain network can benefit companies in numerous ways.

- to gain visibility to late-breaking supply disruptions, providing the information needed to resolve issues in near real time.
- to increase agility so companies can deliver on

unique customer requirements with speed, specificity, and scale—increasing product availability and service levels, reducing lost sales and inventory costs, etc.

• to **increase resiliency** (e.g., maintaining On Full service metrics) while reducing companies' carbon footprint and overall sustainability risk.

Break through obstacles to achieve greater impact : Overcoming obstacles isn't easy—but it must happen for AI to scale and deliver genuine business value, through Great Strategy, Maintaining data bases-space issues wisely and economically. With right talent and last but not the least "Ecosystem partners – such as technology vendors, consulting firms, etc".

Al can automate demand planning, supply planning, inventory optimization, and execution with a focus on making decisions automatically, without human intervention (i.e., a shift from human driving the machines to machines guided by the humans).



Al truly has the potential to transform any supply chain—and in today's environment, such a transformation isn't an option anymore. With the right combination of people, processes, and technology, companies can stop piloting Al and start scaling it so the supply chain network can begin to realize its full potential value—both in the short term and longer term.

Conclusion: We can deeply understand the benefits and the drawbacks well in advance so that there may not be damaging surprises in case of negativity. If it is in positive way the company will not look back, of course! The Benefits of an Al-Based Supply Chain : Robotics, smart warehouses, autonomous transportation vehicles, and automated predictive analytics (e.g., forecasting) can all enhance the safety of a working environment, drive down costs, and streamline systems and processes.

For example, AI can be used to gather comprehensive data that may affect delivery times — such as weather patterns, GPS information, and reroutes. This can help the sales team in predicting more accurate product delivery times, immediately notifying users of real-time inventory adjustments. As a result, companies are better able to provide both new and existing customers with optimal customer service.

The Drawbacks of an AI-Based Supply Chain : AI is still evolving, with countless research and development initiatives underway across the globe. But when algorithms begin to create other algorithms, which are then auto-executed, this presents a "black box" scenario. Researchers and AI engineers may not be able to quickly untangle the nuts and bolts of these AIgenerated algorithms. To put this in perspective, imagine trying to understand as well as predict the "what," "when," "where," and "how" of human creativity and behavior.

As an example, self-driving or autonomous delivery vehicles are powered by extremely complex systems,

including sensors that feed into an AI algorithm, which, in turn, allows for monitoring of surrounding traffic while predicting and accounting for the behavior of nearby human drivers. In these situations, one incorrect prediction by the AI algorithm could be fatal for human drivers. And, of course, the various risks posed by weak cyber-security protocols cannot be ignored.

Weighing the Options : Al comes with some inherent challenges and risks, but this doesn't necessarily mean that it shouldn't be adopted. Instead, AI within the supply chain should be carefully considered within a comprehensive risk and, contingency. And please remember! AI is a tool, and is best used in conjunction with human skills and decision-making processes — not simply as a replacement for human labor.

Though this kind of Supply Chain Concept has its own pros and cons, "No doubt", "Transformation of Supply Chain through AI" is the real enabler. !!

Ø A request to the readers of this Article: To please forward your valuable views and perceptions to the Author and Editor of MMR, to improve on the future articles.

References: Internet, Self presented 2019 MMR Article and The Senior Associate's Review.



GLOBAL SUPPLY CHAIN MANAGEMENT ISSUES

For entrepreneurs, importers and exporters who wish to sell at a global scale, you will need to manage a global supply chain. The challenges that you face with a global supply chain will be complicated, be it cash flow, policy changes, language barriers etc.

So, how do we handle these challenges properly and make use of the advantages of using global supply chains? The key is to know what kind of issues you will come across and how to mitigate them effectively.

This article at a glance:

1. What is a global supply chain?

Global supply chains are global networks that span across multiple countries for the main aim of sourcing materials and supplying end goods and services.

2. How is a global supply chain different from a local supply chain?

In a global supply chain, business owners and importers look for cost-effective alternatives when buying raw materials and engaging services from countries with lower labor rates than their domestic country. In a local supply chain, business owners look for suppliers in their home country, without the involvement of any overseas partners.

3. Who primarily makes up the supply chain?

Your supply chain can be made up of suppliers, vendors, manufacturers, warehouses, transportation companies, freight forwarders, distributors and retailers.

What is The Global Supply Chain and Its Management?

Before we go into the depth of 10 challenges you may face in global supply chain management, we will bring you through the advantages of using a global supply chain and why you should consider it for your business expansion.

When you want to run your business overseas and work with international suppliers or customers, you will need to utilize an international system to produce and distribute your goods and services. This international system is called the global supply chain. Companies generally develop supply chains to enable them to reduce their costs of producing the product in order to sell them at a lower cost point to their customers.

The global supply chain is made up of many parties suppliers, vendors, manufacturers, warehouses, transportation companies, freight forwarders, distributors and finally, retailers. The reason why the global supply chain is referred to as 'global' is that there can be many different countries involved in the production and distribution of a single product. For example, you could get your raw materials from India, engage labor from Vietnam and hire manufacturers from China.

On the other hand, if you only engage help from parties that are situated in one country, it is called using a local supply chain.

Supply Chain Management vs Logistics Management

People often confuse supply chain management and logistics management. Keep in mind that although these two terms are sometimes used interchangeably, they are not the same. Logistics is in fact, a part of the huge supply chain process which transports and stores the goods from point A to point B.

Nevertheless, good logistics management is crucial in a successful supply chain movement.

What Goes Into Managing A Supply Chain?

While it may seem easy on paper, there are actually many steps to ensure that your supply chain runs smoothly, especially during the period when everyone is dealing with a pandemic. Firstly, national borders are constantly changing their restrictions to keep up with the most recent government laws. Secondly, most companies are moving towards digitalization in their workflow. Lastly, there is an increase of communication breakdowns that is undesirable for a supply chain.

Three types of supply chains you may use

1. Continuous flow model : If your company produces mainly the same kind of products that do not change constantly, this is the model you should use. The raw materials used should be replenished nonstop and production times should be cut down to the shortest. You are able to do this because the materials and processes you use remain the same; there is no variation to the end product.

2. Flexible model : This model works best for companies that sell seasonal products such as Christmas decorations or Halloween costumes. These products surge in demand during the months of December and October but drop in demand during other months. With the flexible model, you can shut down once you see a drop in sales and start up again once there is a need.

3. Fast chain model : One industry that demonstrates

the use of the fast chain model is fashion. Fashion trends are ever-changing. Trend A could be booming in popularity in January and go out of trend in February; this is common in fast fashion. Therefore, using the fast chain model allows you to get your end product fast to ride on the ongoing trend before it dies down.

10 Issues and Challenges You May Face in Global Supply Chain Management

Global supply chains have always been competing against one another, just like how competitor companies do. The race to produce and sell the end product to the consumer is vital when there are so many platforms selling the same product. Customers and businesses now want their products shipped out and delivered to their doorsteps 'fast and furious', paired with top-notch customer service and aftersales.

Well, it is a difficult but necessary task. Without a proper supply chain, your business will not be able to operate at all.

1. Increasing costs: In order to keep your product costs low and still earn enough profit margin from the sale, you need to ensure that your costs are kept as low as possible throughout the supply chain. This is a challenge, however, when costs are increasing everywhere. Fuel, raw materials, labor, storage, transfer and inventory costs — these are all rising due to a larger demand.

If you were previously working well with a certain company, the best idea would be to stick to them. Like people say — if it ain't broke, don't fix it. Switching up a section of the supply chain will have repercussions on other sections of the chain as well.

2. Multiple marketplaces for consumers to buy from : With the prevalence of e-commerce websites such as Amazon, Lazada and Shopify, customers are the king. If your customers are unhappy with the service they're getting on one platform, they simply hop onto another. Customers have the choice of multiple platforms to get what they want, be it e-commerce, traditional marketplaces, third-party marketplaces and even dropshipping websites.

3. Demand for fast delivery speeds, quality products and customer service: A lead time of a week is no longer that acceptable, if you're looking at local deliveries. Buyers now are requesting next-day deliveries (which many companies are offering at an extra charge) and packages to reach them within a day or two. If your company cannot cater to these expected delivery speeds, the consumer simply moves on to the next platform. It may not cost a lot to the customer, but expect your sales to deteriorate.

One way to mitigate this is to offer different shipping types to your customer, like what many marketplaces are doing. For instance, if the buyer wants a cheaper shipping rate then they can opt for sea shipping which takes a longer time. If they want their goods by the next day, opt for the more expensive next-day delivery option.

Alternatively, you could store your products in different warehouses located in different parts of the country. This way, you could ship from whichever warehouse is nearer the location of the customer for a faster delivery time.

4. Risk of global policy changes : Especially in today's time and age, markets are fast-changing. Policies are too. One example is the most recent trade war between the US and China, not forgetting Brexit. If you had ongoing relations with China or the US at a point in your supply chain, it could mean huge adjustments for you. With the new and increasing tariff rates, you might need to search for an alternative when importing to and from the US as well.

5. Compliance issues : Of course, every business owner wants to lower their costs of production in order to earn a higher profit margin. However, this often comes at a price. Inexpensive labor may be a result of modern slavery, unfair compensation, child labor, or run-down working conditions — all of which you might not even be aware of.

Always check a company's reputation before entering working relations with them, to avoid brand reputation damage or legal actions against your company. Performing your due diligence through KYC practices could also help raise any red flags against a company.

6. Language barriers when communicating with foreign partners : Language barriers can be a hindrance to daily communication. It is unavoidable though, you cannot expect farmers in say, Ghana, to be able to read Spanish or understand Mandarin.

Therefore, it is advisable to hire professional staff who are able to speak two or more languages and preferably with some industry knowledge.

7. Time zone differences: If you're using a global supply chain, you'll most probably be working very closely with many different countries with varying time zones. For example, the time difference between the UK and Singapore is eight hours, and the difference between the US and India is ten hours. You could have raw materials in India moving through the supply chain but no one at work at the US transportation office. This makes it a challenge when trying to reach your US counterparts if a problem arises with the raw materials.

You could have a standard operating procedure (SOP) for all parts of your supply chain. For example, if there is a problem with the quality of the raw materials in India, what should the US transportation office do? There should be a protocol that can be followed to minimize delays.

8. Quality control : Defect products are generally not accepted in most countries, where customers are fastidious about the product they are receiving. If there are defects in your goods, they are more likely to be rejected and refunded, causing you to lose the sale of that particular product.

Quality checks must always be maintained throughout every point of your supply chain. In other words, there should be personnel assigned to check every batch that comes in and goes out at every process. You could also draw up agreements with your suppliers, manufacturers, distributors to state that all products must maintain a certain level of quality, and the consequences should there be a mishap.

9. Demand for seasonal products during certain times of the year : If you were previously using a continuous flow model for your supply chain but find that there is a huge demand for a seasonal product. Let's say you were producing ordinary, black hair bands before in bulk with no variation to the designs of the bands. However, you find that there is an ongoing trend for "Squid Game" bands and want to get on that trend.

You will have to decide if it is worth the trouble changing up your supply chain in order to cater to the trend. In order to fashion different designs on the previously black bands, you will require more raw materials sourced from different areas, and pack them in a different way. This could lead to delays in your supply chain that could cost you in the long run.

10. Foreign exchange rates and transaction costs : We're talking about huge amounts of money when operating and managing a global supply chain. Thus, even a very small change in foreign exchange (forex) rates can make or break your total earnings. Imagine buying a batch of raw materials for RM5000, which is • 1054 with today's rate. The next day, the forex rate could rise or drop and the price of each batch of materials will fluctuate.

A way to combat this is to make a huge bulk purchase when your local currency is strong, and avoid the cost of bank charges when transferring money internationally.

How Can You Avoid Costs of Cross-border Transfers

Silverbird offers you a smart alternative to the traditional way of sending and receiving payments. With a single multi-currency account, you can convert over 30 currencies and manage high-value payments in 100+ countries globally. This way, you no longer have to worry about fluctuating forex rates and international banking fees.

Source: Silverbird





REVENUE GENERATION FROM DISPOSAL OF NON-MOVING INVENTORY AND IDLE ASSETS THROUGH E-AUCTIONS TO BUYERS

DR. S. B. SARASWAT MANAGING DIRECTOR - GLOBAL E-AUCTION (P) LTD. saraswat54@hotmail.com

policy for disposal of non-moving, unserviceable items, antiquated items, defective items, idle assets including equipment and machines through Forward e-Auctions needs to be formulated by the companies for fetching a good price in a transparent manner.

- I. Why Forward e-Auction?
- Benefits of e-Auctions: Forward e-Auctions have become significantly popular for commercial transactions of some suitable categories of goods and services in all kinds of industries due to a number of benefits including as per below:
- **Convenience:** Bidders are able to participate in an e-Auction from anywhere.
- **Rich information:** All information of each product is in one central space, the e-Auction catalogue on website. It is quite convenient and quick and can be seen any time by any interested person.
- **Time and money saving:** E-Auction saves time and money for both buyers and sellers. Buyers do not need to travel to participate in the e-Auction while seller does not need to set up live event. There are other savings in e-Auctions including reduction in inventory level, reduction in staff and many more.
- **Compare prices:** The main advantage of bidding online in e-Auction is that it provides opportunity to compare prices at a glance for quick decision for bidding. Past prices are also there on the screen during the online e-Auction.
- Avoid transportation cost: There is no need to move the materials to an auction yard for e-Auction.
- Remove human face from price negotiations: In e-Auctions, negotiations are done online and eliminate one to one negotiation. Not all the sellers and buyers are good negotiators in physical presence.
- **Discovery of best total cost:** E-Auction assists in identification of the best total cost as one can track bids on delivery terms and conditions.
- Increased transparency: E-Auction prices are

totally transparent, as all bidders get equal opportunity. This is the reason why PSUs and Government departments are using e-Auctions as mode of purchase and sale. That is why, e-Auctions for allocation of coal blocks, tele-services and lease of mines are very famous in India.

- **Paperless and reduced costs:** As e-Auction process is very simple and quick. It helps in reducing overall cost with paperless activity.
- **Best price discovery:** In case of sale through forward auction, bidder who quotes the highest price is declared the winner of the FA. This is the best discovered price for sale for the offered goods and services.
- Increases buying and selling reach: Since e-Auctions do not have boundaries and display of requirements on e-Auctions website, is visible in any place throughout the world, therefore, new bidders also come forward to participate in the e-Auctions which increases the competition and best market prices are achieved. One can locate additional new buyers anywhere in world for goods and services for conducting e-Auctions.
- II. Procedure for conducting forward auctions (FA) for sale:
- III. Fixing the reserve price for items to be disposed:
- For success of the e-Auction, it is utmost important that an appropriate start bid price should be fixed, which actually prompts bidders to participate in the e-Auction.
- It is a caution to be kept in mind that if very high start bid price is fixed for FA for selling, then under all possibilities, the e-Auction will not start and fail.
- Any one or combination of following actions by e-Auctioneer / company may get a rightly estimated price of item(s), which is important to decide the start bid of e-Auction for sale.
- Price quotes and price trends from different reliable sources like price journals, price lists and price documents.

- The price from original equipment manufacturer (OEM) on the criterion of cost of items on date of supply plus (+) increase / decrease due to inflation or any other basis for assessing the variation.
- Worked out / calculated price based on any of the standard accounting system.
- Price worked out by cost experts considering all factors.
- Price obtained through sealed bid method.
- Cost obtained by conducting trial e-Auction for such items.
- Cost based market survey done for such items.
- IV. Hand over the list of items to be disposed to e-Auctioneer:
- Before launching e-Auction, details of the list of items to be e-Auctioned, should be finalised and frozen.
- The lot making strategy depends upon the type of items, their pricing pattern, their demand in market, number of possible bidders, possibly blending of items having higher demand with items which are having lesser market demand so that all items are sold.
- A number of points need to be considered to make right lots for disposing the items.

V. Fix the date and time for e-Auction:

- It is required to plan to freeze date, time and duration of e-Auction much in advance before the e-Auction takes place.
- This information can be displayed for e-Auction of items / services available at company sites at present and also for items currently unavailable and will be available in near future.
- It should be kept in mind relating to planning that adequate time is given for publicity for wider coverage and inspection of materials (in case of selling) by the prospective bidders.
- The planned duration of e-Auction should neither be too long nor too short. Experience tells that bidders are de-motivated in long duration of e-Auctions.

VI. Formulation of the terms and conditions of disposal:

- General terms and conditions of the company are to be implemented as per the general terms accepted by the company for all kinds of contracts.
- Special conditions: Every contract has certain

special terms & conditions. Likewise, the e-Auction of non-moving inventory and idle assets will also have terms and conditions to be worked out.

- These terms and conditions varies and cover the following terms with complete clarity:
- EMD for participation as interest free amount.
- Inspection date to inspect the material with timings allowed.
- Payment terms.
- Penalty in case of default is also to be mentioned what action to be taken on defaulting bidder.
- Material lifting terms with allowed timings also should be mentioned.
- Whether lifting will be by company's staff / tools & tackles / cranes / handling materials or the bidders have to bring the staff / labor for handling and loading the materials in trucks / dumpers.
- It also needs to be mentioned that whether cranes will be allowed to bring by bidders in case it is not loaded by the company.
- Certain lifting conditions to be clearly mentioned that no pickup and choose will be adopted by bidder while lifting the materials.
- Refund of EMD by company to buyers in a specific period.

VII. Decide the terms & conditions of e-Auction:

- Terms and conditions of e-Auction not only bring clarity in the process of commercial transaction but avoid / protect the organisation in legal disputes. Therefore, it is essential that all terms and conditions of general nature covering all aspects like earnest money deposit (EMD), security deposit (SD), taxes and duties, insurance, risk purchase notice, inspection, delivery, payment terms, compliance of statutory regulations, contract documentation, penalties, banning of business dealings, guarantee and warranty, waivers, obligation of bidders, commencement time of e-Auctions, breach of contract, retention of payment, safety, eligibility of bidders, special performance, confidentiality, rights of companies and bidders, bidding rules, steps in conduction of e-Auction, role of bidder, role of e-Auctioneer in case e-Auction is by e-Auctioneer, liquidated damages (LD), force majeure, conciliation, arbitration, jurisdiction of court, governing law should be clearly decided.
- Likewise special terms and conditions, which vary from e-Auction to e-Auction and as specific to each e-Auction should be decided in advance.

 It is desirable that these general and special terms and conditions also should have annexures describing the various terminologies used in e-Auction for understanding of bidders.

VIII. Advertisement and publicity for the e-Auction for sale:

Following steps are to be covered for promotion of disposal through e-Auctions:

- Prepare the detail draft catalogue containing the complete details of items covering detail specification, quantities, line / storing location of all the materials, photos of items to identify the material at the time of lifting, contact persons & their contact details like phone, mobile, emails etc., all formats of sale for information of the bidders, details of EMD, inspection etc. also should be covered in the catalogue for the clarity of the bidders.
- The draft catalogue needs to be approved by the competent authority of the company. If any changes are suggested by the company, same should be incorporated and revised. Approved catalogue should be made available with the e-Auctioneer for further processing.
- E-Auctioneer to plan and implement the wider publicity of this catalogue containing the details of non-moving inventory to reach to maximum number of buyers within the country as well as abroad.
- The details of e-Auction should be uploaded on the website of e-Auctioneer to be seen transparently by all the visitors / buyers of the items.
- E-Auctioneer should send the catalogue to all its registered bidders through WhatsApp's messages and emails as a communication medium and advance information.
- This catalogue should be sent to all possible and potential bidders identified by the e-Auctioneer.
- E-Auctioneer representatives should call and communicate about the availability of materials to other companies / users who use this kind of materials / items which are under the e-Auction in their production process / factories to explore the possibility of sale as re-usable item in that company.
- Clarify all the doubts of bidders and keep in close contact with interested buyers by e-Auctioneer.
- E-Auctioneer should facilitate these bidders so that they can plan to participate in the e-Auction.

IX. Organise inspection of the disposable non-moving materials:

The following should be organised:

- Necessary support and help should be extended to inspection people of bidders at company's premise.
- Requisite records are to be kept for the people who have visited the company and inspected the items.
- Written confirmation should be taken from the bidders who have inspected the materials in the e-Auction.
- X. Collection of the EMD and security amount from the bidders:
- As per the terms of the catalogue, EMDs of bidders is to be collected and records are required to be updated by e-Auctioneer.
- E-Auctioneer should communicate to company that such and such bidders have submitted the EMD for participation in the e-Auction. This list should be available with company as well as bidders.

XI. Communicate the log-in details to bidders:

- Fix the start bid price and minimum increment / decrement.
- Start bid is one of the most important figures for success of e-Auction.
- Start bid price is primarily decided such that bidders are prompted to strike a bid.
- Start bid price is normally decided on the basis of anticipated final bid after success of e-Auction and estimated price of the lot / service.
- There cannot be any written rules for deciding the start bid rather it is matter of experience and depends on several factors like demand and prevailing price of items, number of bidders available and so on.
- It is advisable, based on the experience, that start bid price in case of FA should fall in range of 0.85% to 0.95% of anticipated price.

XII. Conducting demo e-Auctions

- One day before the e-Auction the e-Auctioneer needs to fix time for demo to all the bidders and accordingly the demo should be given / organise to all bidders.
- This will make all the bidders comfortable so that they can bid independently on their computers from their locations in the proposed e-Auction.

XIII. Bidders' education, interaction and facilitation:

- It has been observed that bidders initially hesitate in participating in online e-Auctions due to lack of confidence and knowledge in e-Auctioning, which is new way of doing, selling and purchasing by them.
- Lot of thrust on education, interactions and facilitation of bidders on regular basis should be facilitated by service providers.
- Vendors and customers should be explained the details of methods, procedure and benefits of online e-Auctions.
- The help from bodies like chambers of commerce, local business associations and bodies, etc. can be taken to propagate the education of e-Auctioning to bidders.
- Demo of e-Auction should be demonstrated to bidders. Actual bidding should be organised and practiced by the bidders. Relevant support and facilities should be extended by service provider to motivate the bidders to accept online e-Auction.
- If some bidders cannot avail facility of computer and internet, they may be permitted to participate from cyber cafés or mobiles from any place and any computer.
- It may further ease this group of bidders if some tips for understanding the e-Auctioning, are shared with them.
- Such bidders also could be guided on specification of computer and how they can acquire their own system of computer with internet to participate in e-Auctions.
- It is very important that bidders should be explained how to deal with situations in case they are not in position to bid due to local problem in computer / internet / power, etc. Service provider should have the procedure to deal with such situations to still bid and bidder not to lose in e-Auction due to such problems.
- The education and facilitation of bidders should be continued by e-Auctioneer till bidders become confident and self-reliant on online bidding and accept e-Auctioning as changed mode of doing business in view of their own benefits.
- It is also desirable that "bidders meet" should be organised by e-Auctioneer with an aim to get feedback from bidders. This will improve the online bidding system, procedure, role, responsibility, transparency, confidentiality and customer care respectively.

- Before starting the e-Auction, the company and e-Auctioneer should discuss the Start Bid Prices on the basis of reserve price or last sale price if any or market prices as received through the sealed bids obtained through sealed bid system of e-Auction.
- There are situations where the expected price of items cannot be estimated, of course, there is always market price knowledge to smart bidders.
- Therefore, e-Auctioneer asks for the online sealbids from the bidders. Whosoever gives the H1 price that becomes the starting price for that e-Auction.
- On the specified date and time, the e-Auction is to be conducted. All bidders come online and bid as per their choices and options available. The e-Auction will be auto-extended in case last bid comes in last two minutes.
- E-Auction will continue till the bids stop coming as per auto extension time.
- The complete e-Auction can be witnessed by the company for which necessary log-in details will be given by e-Auctioneer to company.
- After conducting the e-Auction, various e-Auction reports should be taken out by the e-Auctioneer and sent to the company. The bid-history, H1 report etc. are to be given invariably.
- Company analyses the reports and decides:
- Items are re-auctioned by e-auctioneer if prices are not up to expected level or to place the sale orders on H1 parties.
- If re-Auction is required then re-Auction should be done as per the complete procedure described above
- Re-advertising should be done for re-Auction.
- Communicate the final list of bidders to company.
- As per the sale order and e-Auction terms and conditions, buyers lift the materials after depositing the cost of items as per payment term. Thereafter the EMD's are refunded to bidders and contract is closed.
- In case any buyer defaults and does not take the delivery of material as per the e-Auction terms then penal action of forfeiting the EMD and blacklisting of the bidder is done by the company with the help of e-Auctioneer. In such cases, the e-Auctioneer re-conducts the e-Auction for the company.



BLOCKCHAIN IN TRACEABILITY AND TRANSPARENCY

DR.C.SENGOTTUVELU, CPM(ISM-USA) LIFE MEMBER, IIMM BANGALORE BRANCH FORMER DGM (IMM) HAL-CO, PROFESSOR AND HEAD- RESEARCH ACHARYA BANGALORE B-SCHOOL, AUTONOMOUS COLLEGE, AFFILIATED TO BANGALORE UNIVERSITY, BANGALORE-560 091 sengottuvelu138@gmail.com

bstract : The words' traceability' and 'transparency' are interchangeably used. Traceability enables transparency in supply chains. Blockchain technology (BCT) in traceability and transparency are mainly highlighted in this paper. The author has also attempted to bring traceability examples of few supply chains like food supply chains, agricultural products supply chains, pharmaceutical supply chains and garments supply chains. In Agricultural products supply chains, AgriBlock IoT, a fully decentralized traceability system was discussed. Different device requirements that are integrated from farm to fork processes are highlighted. In garments supply chains, the AI and BCT applications in craft sector are: digitization, authentication, supply chain traceability, consumer insights, branding, consumer connect and carbon credit are highlighted. It is also highlighted the applications of sensors, smart contracts, RFID, bar code system, GPS, IoT, AI and the emerging technologies. BCT improves the supply chain efficiency, governance and trust among the stakeholders in the supply chains.

Keywords: Blockchain technology, supply chains, traceability, transparency

Introduction : Blockchain is a distributed ledger that works without a central authority and allows creating a decentralized and immutable ledger of transactions which are verifiable and traceable. Due to these unique features, it has been explored for various applications primarily in the financial, pharma and agricultural sectors.

With blockchain, the companies can document production updates to a single shared ledger, which provides complete data visibility and a single source of truth. Because transactions are always time-stamped and up to date, companies can query a product's status and location at any point in time.

RFID technology is mostly used in the production, processing, warehousing, distribution and sales, while block-chain technology is a tool for guaranteeing the information which shared and published in this traceability system is reliable and authentic.

Advanced technologies like blockchain, Internet of Things (IoT), and radio-frequency identification (RFID) enable food producers to track every step of the production process, from farm to fork. As a result, food safety can be improved while also increasing efficiency in the food traceability process. Blockchain allows warehouses, manufacturers, suppliers and production sites, distribution centers and retail partners to connect to each other through a permanent record of every transaction that takes place. All the records are then stored and accessible to everyone within the network.

Traceability : Traceability simply means the ability to trace the requirement, to provide better quality, to find any risk, to keep and verify the record of history and production of an item or product by the means of documented identification.

These are the links between requirements and test cases, which ensure that each requirement has been properly tested. Code traceability: These are the links between the requirements and the actual code that is developed to implement those requirements. Figure 1 describes the types of traceability.



Figure 1: Types of traceability

Traceability in Food Supply Chains: The food supply chain is extremely complex especially as products move between many players in different countries. The current challenges with traditional methods of food traceability include incomplete or inaccurate recordkeeping, slow response times during recalls, supply chain fraud, lack of data transparency between supply chain stakeholders, and difficulty tracing products through multiple steps in the supply chain.

Blockchain technology is becoming increasingly integrated in the food supply chain to enhance traceability and safety. With blockchain food traceability systems, every step of the journey from farm to consumer can be recorded and easily accessed.

About 600 million people in the world (almost 1 in 10 people) get ill after eating contaminated food and 420,000 die every year. According to the World Health Organization, children under five years old are at the

highest risk with 125,000 children dying every year from food borne illness. Manual processes, paper-based records, and old systems often take days to weeks to identify contaminated food sources.

It costs a lot of money and uses many resources to respond and control an outbreak.

These consistent problems in the food supply chain reduce public trust in food safety. According to the "Food Safety Supply Chain Vision Study," only 20% of global consumers place complete trust in companies to ensure food safety. Figure 2 depicts the use of Blockchain in Traceability.



Figure 2: Use of Blockchain in Food Traceability.

Traceability in Agricultural Supply Chains : India is considered as an agrarian powerhouse and is the world's second largest fruits and vegetable producer accounting for 10.9 percent and 8.6 percent of the world fruit and vegetable production (FAO Report, 2017). The Agricultural supply chains in India face the issue of meeting the demands of the ever-growing population, poor infrastructure used for preserving the horticultural crops, and quality issues leading to annual food losses to the tune of 40 percent (Ritchie, Reay, & Higgins, 2018). The other problems faced by them are the high number of intermediaries leading to delayed payments and high transaction lead times (Balaji & Arshinder, 2016).

It is found from the literature reviews that the traceability of the agricultural products was found to be the most important enabler. The net cause enablers were; anonymity and privacy, decentralized database, reduced transaction costs, reduced settlement time, secured database technology (Kamble, Gunasekaran & Sharma, 2020). Besides the traceability, other enablers are: audit-ability, immutability and provenance are the key enablers.

Internet of Things (IoT) technologies such as RFIDs and Wireless Sensor Networks, or everyday-cheaper connected devices, to enabled remote monitoring of the conditions in food transportation scenarios and at a very fine granularity along the whole Agri Food supply chain, e.g., from production to consumption. In the Agri-Food domain, in order to maintain trust and reliability along the whole supply chain, it is essential for the stored records to be tamper-proof, while the best case would be if each actor issuing transactions could do that without relying on any centralized thirdparty intermediary. A potential solution to alleviate all of such issues and concerns is the Blockchain technology, which is a peer-to-peer digital ledger that does not rely on centralized servers.

AgriBlock IoT, a fully decentralized traceability system for the Agri-Food supply chain management. Specifically, the proposed solution can rely either on the Ethereum1 or the Hyperledger Sawtooth2 publicly available blockchain implementations, while it is able to integrate various IoT sensor devices. By directly producing and consuming valuable information from the IoT devices along the whole supply chain and storing such data directly in its underlying blockchain, AgriBlock IoT guarantees transparent and auditable asset traceability. To assess the feasibility of the proposed solution, we engineered and deployed the so called from-farm-to-fork use-case: a classical food traceability scenario fostering certified traceability of food along the whole supply chain (Caro, Ali, Cecchio & Giaffreda, 2018).

The main modules of AgriBlock IoT are: API, Controller and Blockchain. Table 1 shows the summary of devices used.

Table 1: Summary devices used in Blockchain traceability

SI. No	Processes	Device Requirements
1	Raw materials proce	essing (R1) Smart tags, Barcodes, QR codes etc.
2	Planning (R2)	Sensors, Connected with weight scales, Smart contracts
3	Growing (R3)	Sensors, Smart contracts
4	Farming (R4)	Sensors can automatize the data, multi-sensory system , Smart contracts
5	Harvesting (R5)	Sensors, Smart contracts, Certifying the process from seeding to harvesting is compliant with certain regulations
6	Delivery to processo	or (R6) GPS, Sensors, Smart contracts to automatize the process,
7	Processing (R7)	Sensors, connected weighted scales, smart contracts
8	Delivery to Retailers	(R8) GPS, Sensors
9	Retailing (R9)	Smart contracts
10	Consuming (R10)	Smart tags, to retrieve the history of the product

Traceability in Garments Supply Chain

Case Study: Kosha Clothing Company : A startup in Bengaluru has developed an artificial intelligence-based method to authenticate handlooms. Recognised by Startup Karnataka and incubated by Deshpande Startups, Kosha won a Startup Karnataka Elevate Awards in 2019-20. On Monday, it announced an Kosha designs have developed an IP based solution by using IoT device. They have used weavesense technology for fingerprinting and weaveproject for labeling. This ensures the genuine, tamper proof, and product traceability.

Technology applications in craft sector are: digitization, authentication, supply chain traceability, consumer insights, branding & consumer connect and carbon credit.

Transparency: A centralized system lacks transparency and trust (el Maouchi, 2018). Tian (2016) addressed the centralized traceability system as a monopolistic, asymmetric and opaque information system. It can create issues such as corruption and falsification of information. Also, issues such as single point of failure can instantly interrupt the centralized systems from its functionalities.

Blockchain is an ingenious invention which can facilitate an immutable, distributed, transparent, secure and auditable ledger (Wamba, Kamdjoug, Epie Bawack, & Keogh, 2020). Walmart recently collaborated with IBM for research on blockchain-based traceability solutions. Kamath (2018) claims that, in a pilot study of IBM, a blockchain-based traceability system developed on Hyperledger Fabric could trace the origin of mangoes just with 2.2 seconds which was possible earlier only within seven days.

Blockchain makes global supply chains more efficient by allowing companies to complete trade transactions directly and without third parties. It also facilitates to increase integration of both financial and logistics services, enabling more fluid data collaboration between stakeholders.

IBM's Food Trust network is a collaborative platform involving major food companies. It uses blockchain to enhance transparency and traceability in the food supply chain. Consumers can scan a QR code on a product to access information about its journey, including when and where it was harvested and processed.

A refrigerated container equipped with an internet of things (IoT) device to monitor the temperature can record any unsafe fluctuations on the blockchain. And if there are concerns about the authenticity of a product that a retailer returns, the blockchain can allay them, because counterfeit goods would lack a verification history on the blockchain.

"Transparency of a supply chain is the extent to which all its stakeholders have a shared understanding of, and access to, the product related information that they request, without loss, noise, delay and distortion" (Hofstede, Beulens, & Spaans-Dijkstra, 2004, p. 290). According to Hofstede (2007) transparency is of three types and the one, which can be achieved through tracking and tracing is history transparency. In short, traceability enables transparency through tracing and tracking.

Case Study: Pharmaceutical Company : A large

pharmaceutical and biotechnology corporation had relied on paper-based manual processes, disparate systems, and external organizations to transport drugs being developed in clinical trials. These disjointed processes and systems lacked real-time transparency and end-to-end audit- ability of data.

Deloitte created a PoC to track drugs across different stages and among different actors in the clinical supply chain. That facilitated the traceability of individual samples that were dispensed to participants in clinical trials. The solution leveraged AWS Blockchain services, iOS and Android mobile technology, and Hyperledger blockchain fabric landscape. The mobile application, with Android and iOS versions, enabled barcode scanning functionality, status filters and counts, and blockchain connectivity.

This supply chain tracking application improved transparency for all users in the supply chain.. Digitization of key processes also reduced the number of manual steps while streamlining the tracking of various data sources. Most importantly, it helped the company reduce the costs of regulatory reporting thanks to new data audit.

Conclusion : Technology adoption in supply chain management improves the efficiency, governance and trust among the supply chain partners. Blockchain technology (BCT) enables the traceability in the supply chains. Traceability in turns enables transparency in the supply chain management. In Food supply chains, food safety and regulations are ensured by adopting BCT. In agricultural products both traceability and transparency are achieved by adopting, BCT, IoT, GPS, RFIDs, Barcodes and AI. In garments supply chains, authentication, supply chain traceability, consumer insights, branding & consumer connect and carbon credit are possible. In pharmaceutical supply chains, the solution leveraged AWS Blockchain services, iOS and Android mobile technology, and Hyperledger blockchain fabric landscape. The mobile application, with Android and iOS versions, enabled barcode scanning functionality, status filters and counts, and blockchain connectivity. In result, BCT improves the supply chain efficiency, governance and trust among the stakeholders in the supply chains

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IMPROVEMENT OF PROCESS FOR EFFECTIVE SUPPLY CHAIN MANAGEMENT

BANI PRASAD CHAKRABORTY HEAD-SUPPLY CHAIN MANAGEMENT, TUAMAN ENGINEERING LTD. banipr43@gmail.com

To improve the effectiveness of supply chain management for the ultimate goal of organization, following procedure should be maintained step by step.

- 1. Project Kick off meeting ,should be organized immediately after getting the award for the project.
- 2. Project planning and scheduling through Project Management software tool like Prime Vera/ MS Project is to be initiated immediately.
- 3. Based on the Project Layout and schedule of supply and erection to complete the project sequentially, SCM has to be involved.
- 4. Based on the sequence of operation ,SCM should get the list of the items and preliminary spec within a month to indicate the lead time of procurement process and supply with a practical approach.
- 5. Based on the lead time of Bulk materials and other equipments, Project cell should indicate the time of initiation of procurement and following consideration is to be maintained.
- a. Supply to be made 1 month ahead of schedule of erection and testing.
- b. SCM has to complete the procurement activity before 1 month of lead time for manufacturing and inspection.
- Maximum lead time required to place order should be 1 month based on the items and criticality.
- d. If any item is required at the month of 5 months from starting of the Project, that particular item should be ordered at the first month if lead time is 2 month for manufacturing and inspection so that it reaches at the month of fourth.
- e. For Bulk materials like steel etc, Prime consideration should be price and delivery in addition to quality. Negotiation to be done with Traders and Prime manufacturer both

considering credit period as well as delivery and loss of time for site activities. Project should indicate the sequence of requirement based on the matching steel for Bulk materials. Now a days project organization is not only dependent on prime manufacturer with long lead time but also depend on potential trader for economic requirement. As lot of GovtProjects for infrastructure development throughout India have started and Prime manufacturer gives top priority to them, it is our high time to develop Potential Traders who can supply materials at staggered delivery at a fixed price for a reasonable period keeping stock at their end.

- f. Fund flow of the payment process should be planned based on the supply requirement at a particular month with value and due date of payment. SCM department can give the fund requirement for every guarter in advancebased on the lead time and availability of materials throughout the project based on the schedule of planning from the software management tool so that Finance cell can plan tentatively for the fund in advance. Project cell should indicate the time of fund availability from the client for the particular item and bulk materials after conversion. This should be done at the first stage of the project after discussions with Project, Engineering, SCM, Consultant of client if any.
- g. Identification of long lead, Medium Lead and off the shelves items is necessary and planning should be done through the combined analysis through ABC(ALWAYS BETTER CONTROL based on the value and importance of the item), VED(Vital, Essential and Desirable) and HML(High, Medium and Low) matrix.Planning cell should do this exercise within early stage of Project after kick off meeting.
- h. This will help to improve the function of SCM cell and others to complete the project on time with a reasonable profit.





Strategic Project Management Overview : Strategic management is the comprehensive process of formulating, implementing, and evaluating organizational strategies to achieve long-term goals and objectives. It involves analyzing the external environment, assessing internal capabilities, setting strategic direction, and making decisions to allocate resources effectively. Strategic management provides a roadmap for organizations to navigate uncertainty, capitalize on opportunities, and mitigate threats in their operating environment.

In today's dynamic business landscape, simply completing projects on time and within budget is no longer enough. Organizations require a more strategic approach to project management, one that aligns project initiatives with overall business goals and drives sustainable competitive advantage. It ensures resources are directed towards initiatives that deliver the most significant impact, driving overall success.

Imagine a company aiming to become a leader in sustainable energy solutions. Strategic project management would involve selecting projects that develop new green technologies, optimize manufacturing processes for ecofriendliness, or launch awareness campaigns to build brand recognition in this space. This study material explores the concept of Strategic Project Management (SPM) and its critical role in achieving a superior market position and competitive advantage.

1.2 Definition & Concepts of Strategic Management : Before proceeding to the Definition and Concept of **Strategic Management**, let's first understand **Organizational Strategy.**

1.2.1 What is Strategy: The word "strategy" has military roots. The term "strategy" traces its roots back to the Greek word "strategos (óôñáôçãüò)," which comprises two fundamental components: "stratos (óôñáôüò)," denoting "army," and "agô (ãù)," signifying "to lead." Hence, "strategos" directly translates to "military general." In ancient Greece, a strategos held the crucial role of meticulously devising and executing military campaigns, overseeing resource management, and addressing logistical challenges, akin to the duties of a military general. For centuries, warfare relied on strategic thinking to outmaneuver opponents.

In Business, Strategy refers to a plan of action designed to achieve a particular goal. It involves setting objectives, determining actions to achieve those objectives, and mobilizing resources to execute the actions effectively.

"Strategy encompasses a meticulously crafted plan of

action aimed at realizing the vision and objectives of an organization.

It serves as a guiding beacon leading to decision-making processes, directing efforts towards enhancing the financial stability, socio-environmental sustainability, and competitive standing of the company within its market landscape".

"Derived from a comprehensive strategic planning process, strategy **Outlines a general direction for the organization and its various facets to attain a desired future state**.

It provides a roadmap for navigating uncertainties and challenges, facilitating informed choices that align with overarching goals and aspirations".

An Organizational Strategy is all about **integrating** organizational activities and utilizing and allocating scarce resources within the organizational environment so as to meet the present objectives.

Organizational Strategy is the blueprint of decisions in an organization that shows its objectives and goals, reduces the key policies, and plans for achieving these goals, and defines the business the company is to carry on, the type of economic and human organization it wants to be, and the contribution it plans to make to its shareholders, customers and society at large.

Organizational Strategy is a well-defined roadmap of an organization. It defines the overall mission, vision and direction of an organization. The objective of a strategy is to maximize an organization's strengths and to minimize the strengths of the competitors.



1.2.2 Key Features of Strategy:

1. Significance: Strategy equips organizations to navigate uncertain futures, anticipate innovations, and address customer and competitor behaviors.

- 2. Long-Term Focus: Unlike routine operations, strategy focuses on long-term developments such as new products, methods, or markets.
- **3.** Forward-Thinking: Strategies are crafted with foresight into employee, customer, and competitor behaviors.
- 4. Roadmap: Strategy serves as a well-defined roadmap, bridging the gap between the current state and desired future outcomes.

Strategy, in short, **bridges the gap between "where we are" and "where we want to be"**.

1.2.3 Strategic Management : Strategic management is the continuous process of evaluating an organization's internal and external environment, setting goals, and creating a plan to achieve a sustainable competitive advantage. Strategic Management is all about the identification and description of the strategies that managers can carry so as to achieve better performance and a competitive advantage for their organization.

1.2.3.1 Strategic Management – A Process of Alignment

: Strategic management involves setting the long-term direction for an organization, aligning resources with that direction, and gaining a competitive advantage.

Strategic management aligns an organization's Values (a set of core beliefs held by an organisation) vision (desired future state), mission (core purpose), goals (aspirations / broad outcomes), and objectives (specific actions) into a unified roadmap for achieving a cohesive path and long-term success.

Key concepts include:

 Organizational Values: A set ofGuiding Principles, Ethics, and Beliefs that define the Company's Culture, Behaviours, Decision-making Processes & other Actions.

Examples:

- Ø Environmental Responsibility: Committed to a sustainable future through renewable energy solutions.
- Ø **Innovation:** Continuously develop and implement cutting-edge renewable technologies.
- Ø **Community Focus:** Partner with local communities to empower their energy needs.
- Ø **Cost Competitiveness:** Leverage Competitive Advantages & Remain Competitive.
- Vision: A clear picture of the organization's desired future state. It articulates the organization's aspirations and ambitions, inspiring employees and stakeholders.

Example: "To be the most trusted provider of clean and affordableenergy solutions"

 Mission: The organization's core purpose and reason for existence. It embodies the organization's overarching goals and values, guiding its strategic direction and decision-making processes.

Example: "To develop Advanced & Innovative technologies that power a sustainable future"

 Goals: Goals represent broad statements outlining the desired outcomes the organization aims to achieve. They translate the vision and mission into more tangible aspirations.

Examples:

- Ø "Become a market leader in renewable energy within 5 years";
- Ø Increase renewable energy capacity by 20% within the next 3 years;
- Ø Become a carbon-neutral company by year 2030;
- Ø Expand operations to Two more new countries within the next 5 Years
- Objectives: Objectives take the strategic planning process a step further by translating goals into specific, measurable, achievable, relevant, and time-bound (SMART) goals that guide project selection and resource allocation.

Examples:

- Ø "By 2025 Develop and launch two commercially viable solar energy products;
- Ø Develop and deploy innovative solar panel technology with increased efficiency;
- Ø Build 2 new wind farms in strategic locations;
- \emptyset Offer competitive pricing plans to attract new customers
- Strategy: Strategy is a well-defined roadmap of an organization - a careful plan or method for achieving a particular goal usually over a long period.

Examples:

- Ø Invest in research and development (R&D) for nextgeneration renewable energy technologies.
- Ø Partner with governments and businesses to promote renewable energy adoption.
- v Action Plans: An action plan is a bridge between strategy and execution. It is a step-by-step process of how to go about the strategy. It translates a welldefined strategy into a roadmap of specific, measurable steps, outlining exactly what needs to be done, by whom, and within what timeframe, to achieve a desired goal.

Examples:

- Ø Allocate a specific budget for R&D projects focusing on solar, wind, and other renewable sources.
- Ø Identify potential government grants and incentives to support wind farm construction.
- Ø Design marketing campaigns highlighting the environmental benefits and cost-effectiveness of renewable energy.
- Objectives and Key Results (OKR): Objectives and key results (OKR) help establish high-level, measurable goals for your business by establishing ambitious targets and outcomes. It provides a framework to execute and achieve desired strategies through goal setting.

Examples:

- Ø Objective: Increase R&D output. Key Result: Develop 2 new renewable energy technologies ready for commercialization within 2 years.
- Ø **Objective**: Expand wind energy production. **Key Result**: Achieve a 20% increase in wind farm capacity by the end of the next fiscal year.
- Ø Objective: Enhance brand reputation for sustainability. Key Result: Achieve a customer satisfaction rating of 90% on eco-friendliness within the next year.
- KPI's : Key Performance Indicators (KPIs) are quantifiable measures or indicators and metrics that gauge a company's performance against a set of targets, objectives, or industry peers.

Examples:

- Ø Percentage of energy generated from renewable sources.
- Ø Reduction in carbon footprint from company operations.
- Ø Customer acquisition rate for renewable energy plans.

Strategic Alignment of Project Initiatives



1.2.4 The Strategic Framework: Putting it All Together: Vision, mission, goals, and objectives all work in concert to form the organization's strategic framework. The values guide the vision, which informs the mission. The vision provides the overarching direction, while the mission clarifies the "why." Goals break down the mission into achievable targets. Goals establish the desired outcomes. Objectives translate goals into specific actionable steps.Strategies determine the approach to achieve objectives. Ultimately, a well-defined strategy utilizes these elements to guide project selection, resource allocation, and decision-making, propelling the organization toward its desired future state. Action plans detail the steps involved. OKRs establish measurable progress towards objectives. KPIs track success, and KPIs can trigger new projects to address shortcomings.

1.3. Strategic Project Initiations Based on KPI's: KPIbased project initiations involve commencing new projects guided by Key Performance Indicators (KPIs) aligned with the organization's strategies and objectives.KPI-based project initiations ensure that new projects are strategically aligned, measurable, and contribute effectively to organizational success by focusing on key performance indicators tied to broader objectives.

1.3.1KPI Based Strategic Project Initiations - Process

1. Clearly Define Strategic Objectives:

- Ø Clearly articulate the overarching goals and objectives that the organization aims to achieve within a defined timeframe.
- Ø Ensure alignment with the organization's mission and vision.
- Ø Strategic objectives should be specific, measurable, achievable, relevant, and time-bound (SMART).
- 2. Identify KPIs Aligned to Strategic Goals and Objectives:
- Ø Identify Key Performance Indicators (KPIs) that directly reflect progress toward achieving strategic objectives.
- Ø KPIs should be quantifiable, relevant, and actionable, providing insight into performance in critical areas.
- Ø Examples: Revenue growth rate, customer satisfaction score, market share percentage etc.

3. Set Measurement Metrics:

- Ø Establish clear metrics and targets for each identified KPI to measure progress and success.
- Ø Metrics should be defined in a way that allows for meaningful comparison over time and against benchmarks.
- Ø Define thresholds or targets to measure success.
- 4. Evaluate Potential Projects:
- Ø Assess potential projects based on their ability to impact or contribute positively to the identified KPIs.
- Ø Consider factors such as feasibility, resource requirements, alignment with strategic objectives, and potential risks.

5. Strategically Prioritize Projects:

- Ø Prioritize projects based on their alignment with strategic objectives and potential to deliver significant impact on KPIs.
- Ø Consider the urgency, importance, and potential return on investment of each project when prioritizing.
- Ø Rank projects based on their alignment with strategic goals and potential impact on KPIs.

6. Select Most Impactful Projects:

- Ø Select projects that align most closely with strategic goals and have the highest potential to drive positive outcomes for the organization.
- Ø Ensure that selected projects have clear objectives, defined scopes, and allocated resources for successful implementation.
- Ø Ensure a balance between short-term wins and longterm strategic initiatives.

7. Monitor Project Progress Against KPIs:

- Ø Implement a robust monitoring and reporting system to track project progress against established KPIs.
- Ø Regularly review performance metrics to identify any deviations from targets and take corrective actions as necessary.
- \emptyset Use real-time data and analytics to assess progress and identify areas for improvement.

8. Close Projects & Realize Strategic Benefits:

Ø Upon completion, evaluate the outcomes of projects against their intended objectives and KPIs.

- Ø Document and communicate the strategic benefits achieved as a result of project implementation.
- Ø Close projects in a systematic manner, ensuring that lessons learned are captured and applied to future initiatives.



Initiating projects based on KPIs involves a systematic approach to aligning project activities with strategic objectives, selecting projects with the highest potential for impact, and continuously monitoring progress towards achieving key performance targets.

By following these steps, organizations can effectively initiate and manage projects based on KPIs, ensuring alignment with strategic objectives and maximizing the realization of intended benefits.

1.4. Benefits of Strategic Projects Based on KPI's:

KPI-based Strategic Project initiations focus on starting new projects that directly address an organization's strategic objectives. Key Performance Indicators (KPIs) are measurable metrics that track progress towards those goals. This approach ensures projects are not undertaken in isolation, but rather contribute to the bigger picture. By aligning projects with KPIs, organizations can prioritize effectively, focusing resources on projects with the highest impact on strategic goals. Additionally, they can demonstrate value by clearly showing how projects contribute to achieving desired outcomes, and measure success by tracking progress using KPIs and assessing project effectiveness in driving strategic objectives. In short, KPI-based project initiations bridge the gap between strategy and action, ensuring projects are strategically relevant and contribute to overall organizational success.



1.5 Three Levels of Organizational Strategies

Strategies are typically employed at three levels: corporate, business, and functional. These levels form the strategic framework of an organization:

- 1. Corporate Level: Corporate-level strategies are the strategic plans of top management. They define the mission and vision statement and have a fundamental impact on the firm's long-term performance. These strategies guide decisions around growth, acquisitions, diversification, and investments.
- 2. Business Level: Business-level strategies integrate into the corporate vision, but with a focus on a specific business unit. At this level, the vision and objectives are translated into concrete strategies that inform how a business will compete in the market.
- **3.** Functional Level: Functional-level strategies are designed to answer how functional departments like Marketing, HR, or R&D can support the defined business and corporate strategies of an organization.



Initiating strategic projects based on alignment involves ensuring coherence across three levels: corporate, business, and functional. At the corporate level, projects are initiated to fulfill overarching organizational objectives, such as growth, profitability, or market leadership. Business-level alignment focuses on how projects contribute to specific business units' goals within the organization, such as entering new markets or diversifying product lines. Functionally, projects are aligned with the objectives of individual departments or functions, ensuring that resources and efforts support the broader strategic direction. By cascading strategic alignment from corporate to functional levels, organizations can ensure that projects are strategically relevant, contribute to overall success, and drive sustainable growth.

In summary, initiating projects based on KPIs involves a systematic approach to aligning project activities with strategic objectives, selecting projects with the highest potential for impact, and continuously monitoring progress toward achieving key performance targets.



FOOD AND BEVERAGES DISTRIBUTION IN SUPPLY CHAIN:

PALLIKKARA VISWANATHAN LIFE MEMBER OF BANGALORE/HOSUR BRANCH vid_shy@yahoo.com

In supply chain beverages distributions producers like food products, are being pressurized in multiple directions. Retailer's powers have grown significantly as grocery, and the retail outlets consolidated into fewer larger supply chains. The importance ofweights as a measure, in transportation todemand more favorable prices and services has affected in supply chain activities. Meanwhile consumer'sgains have remained an eager to try new drinks with flavor, and ingredients encouraging startups to enter the market and compete with established beverage manufacturing and distributing.

Supply chain and more specifically distribution have become key facts in the remaining useful in the beverage manufacturing. By cutting down cost in supply chain, improvement in the areas of distributionwill be able to increase the profitability, and competitive advantage in supply chain. Beverage companies cannot ignore market trends, and preference but the battlefield is often as much the distribution network as it is the consumer

Other distribution possibilities are that many beverages, like diary beverages, being possible exceptions, have sufficiently long shelf life to allow them to be stocked, and sold through outlets, other than larger high retailer supply chains. Convenience stores can stock different brands, and sell them at a premium to consumers. These stores in supply chain often operate outside the normal super market hours, catering to consumers, who accept or even seek the single service purchase with a higher price.

Vending machines use similar logic, and machines function round the clock, requiring little manual maintenance, and intervention. The incessant thirst and requirement of many new consumers, for new beverages, combines with the trends to source locally, and naturally open doors for small producers in the catering centre have to retain their continuity of supply chain. Technology driven initiatives have to bring in improved results in supply chain. Better forecasting and optimization of predictive and prescriptive analysis are now available affordable in which reality with application, service of vendors offering high performances, low outlay solutions. Beverage distributors and producers can leverage big data any in other industry which have affects on distribution in supply chain.

Much of inventory optimization looks at inventory levels holistically across the supply chain while taking into account the impact of inventory at any level. Although good commercial does a lot to reduce unnecessary stocks, more needed to combat the inefficiencies, created by an isolation that is kept in a way that hinders communication in distribution management, separating beverages stock by the type or location as an example in supply chain. Beverages distribution considers all levels and locations, in a distribution network to identify the best places to hold stock, possibly with good delivery vehicles, and not just the requirement in warehouses, to keep inventory as low as possible without undue impact on customer satisfaction, integrated business planning.

Beverage distribution have many sources of data from which to generate business planning, sales marketing, operations, finance, which are a part of supply chain system. Organization may be using different system to process their own part of the data in isolation from other department. Integrated planning software platform that makes best use of the total resources for the higher effectiveness in reaching business goals is important in supply chain.

In supply chain food and beverages distribution face a unique set of challenges, as they are labor intensive, and low production oriented. The provision of stock keeping units, and storing, as slow moving items, mount up in stocks. The most important is that customer and consumer, demand is driving to more frequent and complex deliveries in supply chain. Despite the challenges in supply chain, the organization is poised to greatly benefit by the new automation, and technological changes to be implemented in supply chain.

Competition in the beverages industry is increasing on all fronts, price, and service, as a result distributors need to understand the requirement of retailers, and assess the strength of the competitors and the requirements in supply chain. The importance of performance management, of meeting the needs of the wholesalers, retailers, is based on the integration on the number of concepts of customer service. In supply chain food and beverages reach the table after passing through complex supply chain, as it moves from growers, producers, processing factories to a network of wholesale food, distributors to a network of best large inventory, shelf stage packaged food. In supply chain they command high margins since the shipping, storage, and costs are lower. In supply chain they are less prone to spoilage, and damage during shipping and expensive equipment is not required to prevent wastage. Package food and beverages are distributed in large crates and boxes, and they are required proper handling in supply chain.

In supply chain procurement of food and beverages includes heavy focus on putting in place, the right

structure, and the right approach to logistics.

In supply chain the four pillars of sustainable advantage is to empower strategic sourcing, and procurement in any organization. The first is the affordability, and we have to improve it, if we are standing still even if we are ahead, it may happen to be caught in sustainability in supply chain, and are that all the products should be sustainable to the end, since it is the future from the environment, and consumer point of view. In supply chain reliability it is the alternative sources that we need in food and beveragesdistribution, and should have reliability, in supply chain, and if any alternative source as to provide customers, with products no matter in what adverse supply chain is affected. The next part is the consumer is the most important in food and beverage distribution, and in supply chain, the right people, creating right talent, mindset, and the right approach with empowerment and motivated consumer.

In supply chain food and beverages customer expectations of faster fulfillment and increasing supply agility continue to grow, drive significant challenges for business with rigid fulfillment network to cost to effectively respond to supply chain.

In supply chain food and beverages distribution orders are in bulk and stock piling, products can be an efficient way to cut back on waste, as well save on investment in the long run, as the organization can use the items, that they have stock piled for the future, minimizing subsequent orders, keeping accurate stock level information, and checking the stock regularly and this will ensure that the organization have not ordered to overstock the products.

Organization in supply chain of food and beverages distribution can spend together a perfect plan by analyzing the waste that is a part of supply chain, and as to the production of product, waste generated, and then bring in the difference to control, ensure safety methods to handle waste management in material supply chain.

Uplifting within supply chain is using wasted materials for new needed products is something all organizations should make an attempt in supply chain, and dispose of unwanted goods by undergoing better audits, and understand the re-used category in food and beverages distribution, and enable organization to better supply chain, with good communication with suppliers which should be regular habit in supply chain.

In efficient inventory management in food and beverages distribution industry results in spoilage of products which leads to a vicious cycle, reducing sales profit margins, and customer satisfaction.

In supply chain organization in food and beverages distribution demand for an accurate demand forecasting process in order to maximize accurate production efficiency to minimize inventory, optimize distribution, streamline procurement, and being confidence of growth in supply chain.

In supply chain management food and beverage distribution the amount of inventory required for customer service, product quality, and ability to predict demands and produce the product, in accordance with supply chain requirement.

Warehouse management in food and beverage distribution, is not considered a unique demand, as the variability in customer service, targets, lead time, on the product which will result in high inventory costs, inmisaligned network, it is because storage facilities, are no longer optimized in terms of capacity location.

In supply chain replenishment planning in food and beverages distribution, is the output from inventory, and demand planning provides a better visibility of the products, demand from customer, and material requirement, and the action needed by supply chain manufacturing products to satisfy the market demand.

In supply chain management food and beverage distribution, manufacturing are taken up to manage inventory at locations of the customer to guarantee immediate replenishment as it can develop cost effective strategic and ensure better customer service, minimizing costs.

In supply chain food and beverages, distribution continues to increase complexity, and speed, having to find business solution, enterprise resources planning, to go into the depth of data capabilities which has the need to support supply chain management, with the capacity to leverage the Internet of Things, and to drive the organization.

Sales and operation management planning in food and beverages distributions organization is aligning the supply chain demand, while taking into consideration the final objective of the organization, and at transforming from finance, sales promotion, marketing, procurement, transportation in the food and beverage distribution industry in to one robust central resource for analysis, and decision making in supply chain.

In food and beverages distribution organization the supply chain process is to streamline cycle of planning complete multi-divisional analysis in a period of time so as to avoid contingency risk, competition, when market situation change in supply chain.

In advanced planning, scheduling food and beverages distribution become more driven demand, and thus making them shift to frequent changes in production. As this market requirement must be balanced with production efficiency, changeovers in product become a difficult constraint, to optimize, which places ever great pressure on manufacturing organizations become more agile and to minimize lost production time, and capacity. Changes can be minimized by proper packaging of the products, and optimizing the manufacturing process in supply chain.

In supply chain in food and beverages the use of predictive, prescriptive, cognitive analysis can lead to competition. Data is the most important to make prediction, prescriptive analysis is to maximize profit, minimizes cost, cognitive involves automation through artificial intelligence, machine learning, and data is an important that is used in advanced analytic through internal sources.



MOODY'S RAISES 2024 GROWTH FORECAST TO 6.8 PER CENT; INDIA TO REMAIN FASTEST GROWING G-20 NATION

ndia's real GDP expanded 8.4 per cent year-over-year in the fourth quarter of calendar year 2023, resulting in a 7.7 per cent growth for full-year 2023.

Global rating agency Moody's on Monday raised India's growth forecast for 2024 calendar year to 6.8 per cent on "stronger-than-expected" economic data and said that the country will remain the fastest growing among G20 countries.

In its Global Macroeconomic Outlook for 2024, Moody's Investors Service said with global headwinds fading, the Indian economy should be able to register 6-7 per cent real GDP growth comfortably. For 2025, the GDP growth is estimated at 6.4 per cent. Moody's had projected a 6.1 per cent growth for 2024 earlier.

"India's economy has performed well and strongerthan-expected data in 2023 has caused us to raise our 2024 growth estimate to 6.8 per cent from 6.1 per cent. India is likely to remain the fastest-growing among G-20 economies over our forecast horizon," Moody's said.

India's real GDP expanded by 8.4 per cent year-on-year in the fourth quarter of calendar year 2023, resulting in a 7.7 per cent growth for full-year 2023. The GDP grew by 8.2 per cent in the April-June quarter and by 8.1 per cent in the July-September quarter.

Capital spending by the government and strong manufacturing activity have meaningfully contributed to the robust growth outcomes in 2023, Moody's said in its report.

The agency said high-frequency indicators show that the economy's strong September and December quarter momentum carried into the March quarter of 2024.

"Robust goods and services tax collections, rising auto sales, consumer optimism and double-digit credit growth suggest urban consumption demand remains resilient. On the supply side, expanding manufacturing and services PMIs add to evidence of solid economic momentum," Moody's said.

This year's interim budget targets capital expenditure allocation of Rs 11.1 lakh crore or 3.4 per cent of GDP in 2024-25 (fiscal year 2025), 16.9 per cent above the 2023-24 estimates.

"We expect policy continuity after the general election and continued focus on infrastructure development," Moody's said.

The agency said while private industrial capital spending has been slow to pick up, it is expected to pick up with ongoing supply chain diversification benefits and investors' response to the government's Production Linked Incentive scheme to boost key targeted manufacturing industries.

The year 2024 is an election year for several G-20 countries, including India, Indonesia, Mexico, South Africa, the UK and the US.

Implications of elections can go beyond borders and economic and public policy in today's increasingly fractious world, it said.

"Leaders elected this year will influence domestic and foreign policies for the next four to five years. Businesses are accordingly responding to evolving geopolitical dynamics by reorganizing supply chains and capital sources," Moody's said.

Headline inflation in January eased to 5.1 per cent from 5.7 per cent in the previous month. Core inflation also moderated to 3.5 per cent, down from 3.8 per cent in December.

The RBI held the repo rate steady at 6.5 per cent in February — the same level since March 2023. Given the solid growth dynamics and inflation above the 4 per cent target, we do not expect policy easing any time soon.

"The Reserve Bank of India (RBI) kept its policy rate on hold at its February meeting. The RBI will likely keep rates on hold in the coming months given strong growth and firm inflation," Moody's said.

It said geopolitical realities will be influencing international trade flows, capital flows, international migration trends and international organizations in the years to come. Domestically, industrial and trade policies of several countries are intertwined with foreign policy.

Moody's further said that the global economy is transitioning to a post-pandemic equilibrium with a steady normalization in economic activity across major advanced and emerging markets.

A soft landing appears within reach for several advanced economies because of effective policy manoeuvring, improved supply-demand balances and good fortune such as mild winters in Europe.

Moody's forecast G-20 economies will collectively expand by 2.4 per cent in 2024 and 2.6 per cent in 2025, down from 2.9 per cent in 2023.

Source: PTI



INDIA'S NEW TAX COMPLIANCE LAW IMPACTING MSMES: SECTION 43B(H) EXPLAINED

MELISSA CYRILL

new income tax regulation requiring companies to clear pending bills with MSME units within 45 days comes into effect from Assessment Year 2024-25. Not doing so will result in the increase in taxable income and tax for FY 2023-24 as deductions can only be claimed in the year of actual payment.

As the March 31 fiscal year end nears, many companies in India with unsettled dues to manufacturing 'micro and small' vendors will confront higher taxes in the Assessment Year 2024-25 due to the new Clause (H) inserted in Section 43B of the Income-tax Act, 1961 by the Finance Act passed in **2023.** Seeing as the **2024 interim budget** did not make any mention of this provision, the government has not provided any deferment.

The looming tax liability now has several companies, such as master distributors and traders, reassessing their bulk purchases at the end of the fiscal.

If payments due are not received by the MSME unit from the company within 45 days, section 43B (h) classifies the due amount as part of the company's business income for the current financial year, subjecting it to taxation. Delaying the payment to the following year results in increased purchase costs as deductions cannot be claimed.

MSME classification criteria in India

Classification of Indian MSMEs on the Basis of Investment and Turnover Criteria

Types of enterprises	Investment in plant and machinery or equipment (upper limit)	Annual Turnover (upper limit)
Micro	INR 10 million	INR 50 million
Small	INR 100 million	INR 500 million
Medium	INR 500 million	INR 2.5 billion

For more information, read our article: A Guide to

MSMEs in India for Foreign Investors

What is the new tax compliance under section 43B?

The amended tax laws effective April 1, 2024, stipulates that any business entity in India, including companies, proprietorships, partnership firms, or LLPs, must ensure timely payments to registered 'micro' or 'small' enterprises suppliers. Failure to comply means the entity cannot deduct purchases in the year of acquisition but may only claim deductions in the year of actual payment. Consequently, without these deductions, taxable incomes and business taxes will increase.

Businesses are now concerned about the prospect of incurred expenditures being treated as business income, subject to taxation in AY'25.

India's mercantile accounting system sees businesses typically book expenditures when they are incurred or accrued, which occurs after the receipt of goods and services, even if the actual payment occurs later. However, under the MSMED Act and section 43B(h) of the Income-tax Act, the time limit for payment to MSME enterprises is 15 days, or a maximum of 45 days if there is a written agreement between the buyer and the seller. Additionally, several other laws have outlined provisions for the timely payment of dues to such enterprises.

Hence, a company that settles outstanding dues (pending over 45 days as of March 31, 2024) and pays the vendor well after April 1, 2024, can claim the purchase as a deduction in the FY 2024-25 accounts but not in FY 2023-24. Limiting the credit period to 45 days in an environment where it typically extends from 90 to 180 days will necessitate a shift in business operations to expedite cash flow. As The Economic Times **reports** on this issue, the tax compliance may trigger a fundamental change in how money is managed and deals are negotiated in the trade Section 43B (h): "any sum payable by the assessee to a MICRO or SMALL enterprise beyond the time limit specified in 15 of the Micro, Small and Medium Enterprises Development Act, 2006."

Chapter V, MSME Development Act, 2006:

"Liability of buyer to make payment.

15. "Where any supplier supplies any goods or renders any services to any buyer, the buyer shall make payment therefor on or before the date agreed upon between him and the supplier in writing or, where there is no agreement in this behalf, before the appointed day:

Provided that in no case the period agreed upon between the supplier and the buyer in writing shall exceed forty-five days from the d2Y of acceptance or the day of deemed acceptance." ['Appointed day' refers to the day immediately following the expiration of the fifteen-day period from the date of acceptance or the date of deemed acceptance of any goods or services by a buyer from a supplier.]

Date from which and rate at which interest is payable.

16. Where any buyer fails to make payment of the amount to the supplier, as required under section 15, the buyer shall, notwithstanding anything contained in any agreement between the buyer and the supplier or in any law for the time being in force, be liable to pay compound interest with monthly rests to the supplier on that amount from the appointed day or, 'as the case may be; from the date immediately following the date agreed upon, at three times of the bank rate notified by the Reserve Bank.

Recovery of amount due.

17. For any goods supplied or services rendered by the supplier, the buyer shall be liable to pay the amount with interest thereon as provided under section 16."

Challenges faced by MSME suppliers: Unintended consequences of legal reform

The government had enacted the law to alleviate the challenges faced by small businesses, which often endure delays of up to roughly six months in receiving payment for goods and services rendered, especially from large buyers.

Moreover, while the enforcement of the pertinent regulations varies, penalties can be imposed on specified companies for failing to file MSME-1 due to outstanding payments to MSME suppliers exceeding 45 days.

Suppliers have the option to file delayed payment claims against buyers, but many MSMEs are hesitant due to potential repercussions on future relationships. Given how trade and distribution networks run in India, it becomes very difficult for micro and small businesses to stand up to their large clients, especially if they are dependent on their orders. If the relationship has run afoul, it may have very real financial consequences for the MSME's ability to be a going concern.

To avoid the implications of the new statute, companies and vendors are exploring various strategies to mitigate its impact, but some approaches may not withstand scrutiny from auditors and tax authorities in the future. These include **tacit understanding** between the distributor and vendor or direct actions, such as surrendering the MSME (micro, small, and medium enterprise) categorization of suppliers, reclassifying from 'manufacturing entity' to 'trading entity', not cashing checks before a specified date, or not responding to the company's registered letter to the supplier asking about their MSME status.

Some vendors are voluntarily waiving their claims on interest for delayed payment by big buyers, per accounting firms speaking to the media. However, this specific approach may face challenges due to provisions in the MSME Development Act, where non-payment to registered MSMEs results in interest payments at triple the central bank rate.

Finally, several companies are reconsidering their bulk orders and assessing payment timelines to avoid higher tax liabilities.

Source: India Briefing



PREPARING FOR 2024 SUPPLY CHAIN CHALLENGES AND PRIORITIES

Organizations are prioritizing preparedness against ongoing uncertainty.

By Marisa Brown, Senior Principal Research Lead, APQC · March 4, 2024

With each new year comes a new (and/or continuing) set of supply chain successes and challenges. In early 2024, geopolitical developments and technological advances continue to affect how supply chains and companies conduct business. Internally, businesses must also adjust to more staff reductions and retirements and further develop their new and mid-career supply chain staff. Organizations continue to re-evaluate their approaches and look for ways to improve.

At the beginning of 2024, APQC concluded its 10th annual Supply Chain Management Priorities and Challenges research, including a survey of more than 350 professionals from around the world and across multiple industries. As in previous years, the research examined organizations' supply chain management priorities, performance, and anticipated trends.

The results reveal that fewer organizations achieved their business goals in 2023. Yet organizations remain focused on the future, with many anticipating further digital developments and investments in their supply chain

2023 was not an easy year : Although many aspects of business returned to something resembling a prepandemic state in 2023, the majority of organizations in APQC's research did not achieve all of their business goals for the year (Figure 1). Looking back on 2023, we see that a majority of organizations (62%) missed their 2023 targets, and four in five organizations reported falling short of their competitors' or peers' performance.

These drops in performance reflect the ongoing uncertainty that supply chains have been facing and continue to face. These results are a cause for concern given that a larger proportion of organizations fared worse in 2023 than in previous years. In 2024, as organizations try to catch up to their peers, they will need to seek new ways to meet their goals while dealing with new and different challenges. Organizations should evaluate which factors make the most impact on their business and determine whether there is the potential for these to affect business goals long-term.

Diving deeper into the data, APQC finds that compared to the previous few years, organizations are trending more positively in terms of performance on specific goals related to customer satisfaction and return on investment (ROI). It is an encouraging sign to see performance on several additional goals trending upward from 2022 to 2023, even though overall achievement remains low. To continue to see improvement in these goals, 2024 needs to be a year of improved flexibility and adaptability for supply chains as global uncertainty continues.

Major trends affecting supply chains in 2024 and beyond

In terms of trends affecting supply chains, research participants anticipate that technological advancements and stronger data and process management practices will make the biggest impact over the next three years (Figure 2). Big data and advanced analytics, supply chain digitization, data management, and process standardization make up the top four trends anticipated to make the greatest impact.

For the third year in a row, big data and advanced analytics is in the top spot. Emerging technologies are helping supply chain professionals make sense of everincreasing amounts of data, but it's hard to keep pace with all the internal and external sources. With the digital supply chain, organizations are integrating physical processes with digital data and implementing digital workplace tools, focusing on achieving the desired ROI from these investments.

Strengthening foundational data and processes are in the third and fourth spots for anticipated impacts on supply chain. In its first year on the survey, data management highlights the importance of having wellmanaged underlying data models, clear data governance, and more critical data-related processes. If the underlying data is not reliable, the decisions the organization makes based on that data are questionable. Just as organizations need a good data foundation, they also need a solid process foundation to maximize efficiency and technology investments. Standardized processes are also key for effective business continuity plans as organizations cope with continued uncertainties and rapid changes in the external environment.



Figure 1: Performance on business goals

Source: APQC

Changes in legal and regulatory requirements and pressure from other stakeholders (e.g., customers, and investors) are driving the impact of sustainability and environmental and social issues on supply chains. But as organizations make public net zero promises, many of them are scrambling to create an actionable plan to hit those targets in time, especially for the more complex Scope 3 emissions from the value chain.

In addition, it is notable that the percentage of respondents anticipating these trends to have a major impact on supply chains has increased substantially over the last year. In the previous year's research, 34% of respondents expected that big data and advanced analytics would make a major impact, whereas in the most recent survey, an astounding 65% of respondents said this would make a major impact. Similarly, 41% of respondents last year believed supply chain digitization would make a major impact within the next three years, and in the latest survey, that amount jumped to 64%.

Figure 2: Top five trends, innovations, and developments affecting supply chains by 2027



Source: APQC

Obstacles to improvement

APQC also asked supply chain professionals about obstacles to improving their organizations' supply chain processes. The top four obstacles experienced by respondents are the following:

- implementation of new technologies;
- lack of collaboration across functions and externally;
- lack of governance/poor data management; and
- talent/labor concerns (e.g., staffing shortages or strikes).

Given that technology had such a prominent spot among trends for the next three years, it is not a surprise that the implementation of new technologies has surfaced as an obstacle for 52% of survey respondents. There has been a lot of buzz around new technologies such as the internet of things (IoT), AI, and autonomous vehicles. It can be difficult to identify how to operationalize these technologies within the supply chain, especially AI. Additionally, with the adoption of any new technology comes the need for organizations to address cybersecurity to prevent disruptions caused by security breaches. This obstacle also reflects the increased need for strong change management as organizations sort out their process changes, new roles and responsibilities, and more.

Fifty percent of research participants rated a lack of collaboration across functions and externally as an obstacle to improvement. This obstacle has consistently been rated highly in APQC's annual research. To address this challenge, APQC advocates for using knowledge management approaches and techniques to provide support and guidance for collaboration. Disconnects in the supply chain can lead to ripple effects that impact customers and their ability to receive orders on time, in full, damage-free, and with accurate documentation. With increased uncertainty, supply chain leaders need effective collaboration to be resilient and responsive. Poor data management and governance also present a foundational issue to supply chains. Having clean, wellmanaged data is critical to the success of systems across the organization. Having inaccurate data can affect a company's ability to use analytics effectively, automate activities, and more.

"With the adoption of any new technology comes the need for organizations to address cybersecurity to prevent disruptions caused by security breaches."

Last year, labor concerns held the top ranking for organizational obstacles. Although 2024 has already had its share of labor challenges, supply chains are not alone when it comes to dealing with labor concerns like strikes, lack of qualified candidates, unfilled vacancies, layoffs, etc. However, given the business-critical role that supply chain plays in getting products and services to the customer, addressing this obstacle needs to be an organizational priority.

Overcoming obstacles: APQC found that organizations

are taking a variety of measures to address their supply chain obstacles. Most try to be adaptable in the face of volatile conditions, with 84% of respondents saying that their organizations have re-evaluated or modified their supply chain strategy to overcome obstacles.

In addition, 55% expect to increase their budget for supply chain tools, technology, innovation, and initiatives in 2024. In light of the inflationary environment for businesses, this ensures that supply chains can continue to meet the needs of the business while implementing and operationalizing new technologies.

2024 focus areas : In addition to examining major trends and supply chain obstacles, APQC's annual research includes insights about organizations' overall supply chain areas of focus for 2024. An area of focus is one targeted for investing resources, innovation, and hiring. For each area of focus, respondents provided two more detailed priority areas. Figure 3 shows the top five areas of focus for 2024, as well as the corresponding results from 2023.

The 2024 top five areas of focus are the same as in 2023, but in the most recent research more organizations indicated each as a priority. The top area of focus, supply chain planning, was named an area of focus by 90% of respondents—a 4% increase from 2023. For all other areas, there was at least a 12% jump in the percentage of respondents rating each as an area of focus. This increased focus marks an important time for the profession. Supply chains are in the spotlight; now they have to shine and rise to the occasion.

Figure 3: Top five annual focus areas



Source: APQC

Supply chain planning. Respondents focusing on supply chain planning indicated integrated business planning and demand planning and forecasting as their top two priority areas. To address disruptions and global uncertainty, companies need to pull their resources together to ensure that they align business goals and supply chain operations. This leads to the creation of an effective consensus forecast and supports scenario planning to prepare for potential disruptions.

"To make these process improvements stick, leaders must adopt change management practices that address staff concerns and resistance." Organizations intend to conduct benchmarking against similar companies, improve collaboration, implement new technologies, and standardize processes to start addressing their supply chain planning priorities.

Sourcing and procurement. Respondents focusing on sourcing and procurement named supplier relationship management, risk mitigation, and sustainability as their top priority areas within this function. Supplier relationship management has consistently been a top priority area within procurement over the years.

This speaks to the need for companies to focus on developing close relationships with key suppliers. APQC advocates for shifting procurement from a focus on transactions to fostering strategic relationships that benefit all parties involved. With increasing regulation related to sustainability, voluntary disclosure in the past has now become required. Many businesses now must disclose and verify their suppliers' sustainability data or face the threat of financial penalties or disrupted shipments.

The actions organizations intend to take with procurement include implementing new technology and capabilities to increase supply chain visibility. They also intend to further standardize their procurement processes and identify and implement proven practices.

Innovation. Innovation helps organizations stay ahead of the curve even when facing rapid changes, multiple disruptions, and rapid technological advancements in a global context. The top focus area in innovation for 2024 is operational or process innovation, which enables organizations to find new, different, and more effective ways of going to market and operating their organizations and supply chains. It is followed by product and service innovation and creativity as top priorities. There is a large difference between the percentage of respondents selecting operational or process innovation (46%) and those selecting product and service innovation (30%). This speaks to the desire organizations have to find better ways to drive more effective supply chains versus introducing new products or services. To make these process improvements stick, leaders must adopt change management practices that address staff concerns and resistance.

Organizations intend to integrate innovation into organizational goals and implement new technology and capabilities to meet their priorities. They also intend to increase open innovation ecosystem collaboration, embrace new business models, and identify and implement best practices. Overall, companies are looking for new, more collaborative ways to innovate and drive supply chain and enterprise-wide improvements.

A culture of preparedness : APQC's latest research in priorities and trends for supply chain professionals indicates that 2024 is shaping up to be another challenging year for supply chains. Disturbances continue, such as the volatile freight costs caused by shipping disruptions at the Suez and Panama Canals.

As such, supply chain professionals anticipate that a greater number of trends will make a major impact on supply chains. To address potential obstacles, at least 55% of organizations plan to increase their supply chain budgets. They are also focusing attention on more aspects of the supply chain in 2024.

The theme for supply chains this year is preparation in the face of uncertainty. To support resilience, organizations aim to tackle data governance and management and to leverage new technologies that enable greater visibility and create more effective scenario plans. They also aim to tighten their processes to support clear roles and responsibilities. In a recent article, Supply Chain Management Review (SCMR) discussed the need for organizations to consider disruptions to be the new norm, and APQC agrees. Strong organizational leadership remains essential for supply chain preparedness and talent management. Leaders can support supply chain professionals who collaborate effectively while embracing the full use of technology. They should also create a culture of preparedness that ensures the entire organization is ready to face almost certain uncertainty.

Source : SCMR.com

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'PROCUREMENT FROM GOVT'S GEM PORTAL LIKELY TO REACH RS 4 TRN THIS FISCAL'

The government e-Market (GeM) portal was launched on August 9, 2016, for online purchases of goods and services by all the central government ministries and departments

The procurement of goods and services from the government portal GeM will cross Rs 4 trillion by the end of this fiscal due to higher buying activities by various ministries and departments, a senior government official said on Monday.

The government e-Market (GeM) portal was launched on August 9, 2016, for online purchases of goods and services by all the central government ministries and departments.

"As of today, the procurement has crossed Rs 3 trillion and going by the trend, the procurement this fiscal will reach Rs 4 lakh crore," GeM CEO P K Singh told reporters.

In 2021-22, the procurement value stood at Rs 1.06 trillion. It crossed Rs 2 trillion last year.

Singh said that the share of Central Public Sector Enterprises (CPSEs) such as Coal India in the total buying of goods and services is increasing at a healthy rate.

More than 245 CPSEs, including Coal India, SAIL, NTPC and SBI, are participating in the process.

GeM has over 63,000 government buyer organisations and over 62 lakh sellers and service providers offering a wide range of products and services.

Currently, government departments, ministries, public

sector units, state governments, and central armed police forces are allowed to carry out transactions through this portal.

The portal provides a wide range of products from office stationery to vehicles.

Automobiles, computers and office furniture are some of the major product categories.

Services, including transportation, logistics, waste management, webcasting and analytical, are listed on the portal.

South Korea's KONEPS is the largest such platform in the world.

Currently, GeM stands at the third position after Singapore's GeBIZ.

States/union territories like Uttar Pradesh, Gujarat, Maharashtra, Delhi, Madhya Pradesh, Jammu & Kashmir, Odisha, Bihar, Assam, and Uttarakhand have placed significant amounts of procurement orders in the current financial year.

"GeM's expansion into the services sector has played a pivotal role in driving its accelerated adoption. Services sector contribution in the total procurement has increased from 23 per cent in 2021-22 to 50 per cent this fiscal," Singh said.

Source: Business Standard



SECURING INDIAN AUTOMOTIVE SUPPLY CHAIN FROM DISRUPTIONS

The supply chain and logistics heads of Indian automotive and component manufacturers are still haunted by the disruptions that started with the Covid-19 pandemic. However, there are better solutions now available to tackle these issues with technology and digitalisation taking it up.

"The global energy transition and changing emission norms are putting automotive and component manufacturers into a very unique and tricky position as we have to fund the existing product line to meet the tighter and greener norms and at the same time invest in the future energy." This is how ShubhankarChatterji, chief supply chain officer of Cummins India responded to the questions on how Cummins India is managing the changing business environment.

He was speaking during the 7th edition of the Auto SCM Summit on December 5, 2023, organised by Indian Transport & Logistics News. Presented by Frankfurt Airport, AutoSCM Summit 2023 also had Dachser as Supporting Partner and Hong Kong Air Cargo Terminals (Hactl) as Sustainability Partner.

Chatterji also spoke about the investments and efforts they are putting into transforming the industry and business. "The good part is that Cummins India is into all alternate energies. For example, we acquired the world's fourth-largest manufacturer of fuel cells and electrolytes," he said. Talking about the importance of visibility in the supply chains, Mandar Vaidya, Director of Materials Management, Region India, ZF Group, said, "For at least the incoming supply chain we want to know where they are. The same applies to our customers who are the OEMs, be it for the manufacturing process or spare parts. Beyond resilience and visibility, if there is a shift in technology or consumer preference, the supply chain can plan or anticipate them." He also mentioned the need for stakeholders to be agile when a disruption hits to deal with it in the short term as well as the efforts to take it back to normal in the long term.

Digital solutions for disruptions It was on the same lines that Om Vijayvargiya, Head – SCM & Logistics, Schaeffler India, spoke about the rate with which the demand fluctuations happen in the market and how managing inventories is always a problem for automotive manufacturers and their logistics companies. However, on a positive note, he also mentioned that new solutions, particularly digital solutions, coming into the market. He said, "During the Covid-19 pandemic, the industry understood the need for agility and resilience. One of the biggest challenges was the absence of real-time visibility of our consignments and the inability to plan our production because of that." "In the last three years, many visibility solutions have been coming to the surface and now with these solutions, we can plan our production accordingly. Production schedules are also getting settled accordingly. Sometimes the consignments arrive early is also an issue because the inventories are also going up. And in this case, visibility can help us to cut future orders," he added.

Building on the challenges in managing the inventories, Yogesh Ramtekkar, Head of Supply Chain Management, PV Clean Mobility Technologies, pointed out the importance of sales projections and predictions as well as the communication gap. "I think the communication gap between OEMs, Tier 1, Tier 2 and Tier 3 suppliers is one of the most important challenges. It applies to overseas suppliers as well, because for instance, the transit time from the US is 60 to 90 days and any challenge to the free flow of information can adversely affect the industry," he said. Empowering the future of logistics The Japanese EV company Terra Motors' chief executive officer Akihiro Ueda spoke about the EV manufacturing at Terra Motors, the charging infrastructure provided by Terra Charge and the financing solutions provided by Terra Finance with his presentation titled "Empowering the future of logistics."

In fact, in December 2023, Terra Motors announced the launch of its blanket solution to electrify last-mile delivery that includes L5 Loader vehicles, EV financing, charging infra, and software solutions. He also spoke about the current status of EV adoption in India and how the Return on Investment (ROI) for EVs among logistics companies are high. "It makes a lot of economic sense," he said.

Digitization of international logistics for auto customers "Automotive customers are looking for better visibility of rates and routes as there is a lot of uncertainty throughout the supply chain." MadhumeetaKumari, Enterprise Sales Lead at Cogoport was delivering her presentation and spoke about how the digital freight forwarder helps their automotive customers to navigate the international logistics arena. "The customers are looking for longer contracts and shorter routes to ensure better customer experience and faster deliveries. The digital freight forwarders are also venturing beyond international shipping into customs, CFS and last-mile delivery to help these customers deal with supply chain issues effectively. These companies also possess data of the latest trends and changes in the industry and thereby help customers to take better and faster decisions," she said.

Tech advancements for a seamless supply chain Reflecting on the lessons learned in recent years from a strategic standpoint, HirendraDigvi, Executive Director of DivgiTorqTransfer Systems, emphasizes the importance of economic and geopolitical protection in the current scenario. He points out that for the automotive industry to thrive, whether in electrification, automation, or other key technologies, understanding the current position and sources of technology is crucial.

Digvi highlights the necessity for supply chain security, stating, "No investor would buy the strategy if I say that I can become the number one EV supplier but be 70% dependent on China. I must have supply chain security that enables me to make my long-term value propositions sustainable." JP Mishra, Country Manager-India at Newland AIDC, a global RFID manufacturer, shares insights from his extensive experience in the automotive industry, emphasizing the pivotal role of RFID (Radio Frequency Identification) technology in enhancing supply chain transparency and information management.

Mishra underscores the multifaceted benefits of RFID, explaining how it enables the meticulous tracking of components, tools, and machinery, thereby substantially elevating operational efficiency. In the past, committing to tentative dates for consumers was challenging, but with RFID, businesses can now calculate logistics, inventory, and production plans through a unified platform. "Unlike before, now you can commit to a tentative date for consumers by calculating logistics, inventory, and production plans through a single window. This not only enhances the company's goodwill but also offers improved visibility across the entire system," he added.

Mishra contends that RFID technology is a gamechanger, empowering businesses to optimize their operations, build consumer trust, and navigate the complexities of modern supply chains with precision and reliability. "Many individuals in the logistics sector hesitate to adopt RFID technology due to concerns about increased costs. However, it has gained significant popularity, particularly in the automotive sector, where the demand for swift deliveries is paramount," he added.

Vijendra Singh emphasizes advancements in monitoring and enhancing visibility within the supply chain through the incorporation of multiple alarm reports, geofencing, and RFID technology. He notes the transition from manual data collection to a more efficient push mechanism. By implementing geo-fencing for suppliers, OEMs, and their own hubs, coupled with RFID tags, realtime data provision has become a reality. Singh highlights the impact on customer service, stating, "Now, dashboards are providing us more visibility of the real-time location of the parts." This evolution in data acquisition methods signifies a proactive approach, leveraging technology to streamline processes, improve accuracy, and offer customers upto-the-minute information on the status and location of their materials. Tech-driven cost reductions in

Source: itln.in



SUPPLY CHAIN, MANUFACTURING AND PROCUREMENT 'A VERY BIG FOCUS' FOR COST-CUTTING CFOS

VINCENT RYAN SENIOR REPORTER-AT-LARGE

Executives' 2024 priorities make sense given geopolitical tensions and the rising costs of raw materials and other inputs, said Boston Consulting Group's Paul Goydan.

Cost optimization, leaner corporate structure, cost efficiencies, cost cutting, resource optimization, rightsizing — whatever it's called, CFOs and other C-suite executives are making cost management and reduction a 2024 priority for performance improvement. There are many reasons companies are cutting costs — uncertainty over economic growth, the high cost of capital, supply chain challenges, inflationary price increases, and more. But it boils down to years of "unexpected disruption" in market conditions and customer shifts that companies have had to adapt to by adding cost and complexity to the business, said Paul Goydan, managing partner and global leader of Boston Consulting Group's (BCG's) accelerated cost advantage program. "This is a holistic cost challenge — one that's built up over five years of very rapid adjustments that companies had to make," Goydan said.

Supply chain a priority: While many companies lay off workers to shave overhead costs, nearly twothirds of the 600 global executives surveyed by BCG are prioritizing supply chain and manufacturing costs over other historically popular cost management actions.

"There's a very big focus on supply chain, manufacturing, and procurement," said Goydan, a change from prior cost-cutting cycles. That makes sense given geopolitical tensions, and the rising costs of raw materials, manufacturing, and energy, he said.

To lower manufacturing and supply chain costs, companies can optimize procurement, logistics networks, and distribution and warehousing, and invest in digital lean manufacturing and advanced planning processes, said BCG.

Procurement leaders need to know what size price increases from suppliers are fair, and that means trying to understand a supplier's true cost of inflation.

Paul Goydan

Boston Consulting Group

Goydan called it "building the least-cost network for today's realities."

Goydan said he sees some companies rewiring their supply chains, adding sources of supply so they can avoid geopolitical tensions, cost increases, or shipping disruptions like the attacks on container ships occurring in the Red Sea. Changing the manufacturing location of source components, if necessary, renegotiating contract manufacturing deals, and analyzing shipping and transport costs are all a part of "rethinking supply chains while taking cost and inventory out," said Goydan.

In procurement, sourcing strategies need to be examined in light of sales volume changes and cost inflation. Procurement leaders need to know what size price increases from suppliers are fair, and that means trying to understand a supplier's true cost of inflation, Goydan said.

Shifting demand : In their own businesses, CFOs and CEOs must understand and forecast demand and how demand is shifting, said Goydan. Demand means sales volume.

As of February 20, S&P 500 companies had reported a revenue growth rate of 4% last quarter, below the 5-year average of 6.9% and the 10-year average of 5%, according to FactSet.

When a company understands the trends underlying sales volume, it can tie those back to the cost base and try to understand where demand is going, Goydan said. For certain products and product lines, where are there big fixed costs that sales volumes don't justify?

Consumer buying patterns, for example, have changed, said Goydan. U.S. consumers are not buying as many high-end or luxury products, they're not "taking as many trips to the high-end coffee shop or buying name brands" as they used to.

So to get growth back, companies "have to change their product mix, and they have to invest in that product mix," said Goydan. That also means selling off product lines that don't meet performance standards.

A sustainable approach : While many companies that launch cost programs meet or exceed their savings goals, "a strong start doesn't guarantee lasting change," said BCG. More than a third of executives in BCG's cost survey said costs eventually creep back into the business.

So before launching a cost initiative, executives need to think about "bringing their employees along in managing costs" because doing so "leads to sustainable performance improvement," said Goydan. He called out three "golden rules":

- 1. Demonstrate visible leadership and commitment from the top down.
- 2. Provide real transparency about cost-cutting efforts, especially in employee communications about what and why moves are happening.
- 3. Foster a culture of participation by breaking down barriers between management levels.

Successful organizations share with employees, when they can, where they are seeing costs, why they are seeing higher costs, and how the company is seeing demand and volume shift. "It's sharing performance data deeper in the organization than was historically done," Goydan said.

Source: www.supplychaindive.com



SUPPLY CHAIN FINANCE INDUSTRY REPORT 2024

he "Supply Chain Finance Market - Global Industry Size, Share, Trends, Opportunity, & Forecast 2019-2029" report has been added to ResearchAnd Markets.com's offering.

The Global Supply Chain Finance Market was valued at USD 5.7 billion in 2023 and is anticipated to grow with a CAGR of 8.7% through 2029, reaching USD 9.4 billion.

The growth of the market is driven by several factors, including favorable policies, the financing needs of small and medium-sized enterprises (SMEs), and the increasing complexity of global supply chains. The emergence of complex and diverse supply chains globally has led to an increase in the number of suppliers, which has created a need for financing optimization for enterprises.

The rise of economic nationalism, the global financial crisis of 2008, and the Covid-19 pandemic have exposed weaknesses in global supply chains, which have triggered a rise in research on supply chain finance. The adoption of advanced technologies, such as blockchain initiatives and technology platforms, has also contributed to the growth of the market.

Additionally, the increasing emphasis on sustainable sourcing is one of the key drivers of this growth. The market is expected to witness significant adoption of strategies that provide differentiated and innovative solutions to suppliers that require liquidity and working capital.

Key Market Drivers

The Efficiency Imperative : In today's hyper-competitive landscape, streamlining operations is paramount. SCF cuts through the fat of traditional financing channels, directly connecting buyers and suppliers. Buyers leverage their stronger credit to secure discounted early payment options for their suppliers, while suppliers bypass lengthy application processes and enjoy immediate access to cash. This expedites payments, reduces transaction costs, and optimizes working capital for both parties, propelling them towards leaner, more efficient operations.

Risk Mitigation Symphony : The global supply chain is a delicate ecosystem, susceptible to disruptions from volatile markets, geopolitical shifts, and unforeseen events. SCF injects stability into this equation. Early payment reduces supplier's reliance on external borrowings, mitigating their exposure to interest rate fluctuations and credit tightening. For buyers, the ability to pre-finance critical materials and components acts as a buffer against potential supply chain shocks, ensuring continuous production and smooth delivery schedules. This risk-mitigating aspect makes SCF a harmonious note in the concerto of supply chain resilience.

The Supplier Empowerment Chord

SCF is not just about financial optimization; it's about building stronger relationships within the supply chain ecosystem. By offering early payment options, buyers demonstrate their commitment to their suppliers, fostering trust and loyalty. This translates into improved communication, collaborative problem-solving, and enhanced quality control. Suppliers, empowered by the financial boost, experience increased growth opportunities and reinvestment potential, becoming more reliable partners in the chain. This collaborative spirit strengthens the entire supply chain ecosystem, creating a harmonious chord of mutual benefit.

The Technological Crescendo

As technology disrupts established paradigms, SCF embraces the revolution. Innovative platforms automate manual processes, integrate SCF solutions with existing enterprise resource planning systems, and leverage data analytics to provide real-time insights into cash flow and risk exposure. This data-driven approach allows for dynamic adjustments, customized solutions, and proactive risk management, making SCF a technologically-driven crescendo in the supply chain symphony.

The Global Expansion Chorus

The melody of SCF is resonating across continents. While regions like Asia-Pacific, with its burgeoning economies and complex supply chains, are leading the charge, the chorus is steadily catching on in Europe and North America. Factors like increasing trade volumes, growing awareness of SCF benefits, and supportive government initiatives are fostering adoption across diverse industries, from automotive and electronics to agriculture and pharmaceuticals. This global expansion ensures that the SCF movement will continue to play a vital role in the seamless flow of goods and services around the world.

Key Market Challenges

The Onboarding Enigma

Integrating SCF into existing financial systems and convincing diverse supply chain participants to adopt it can be a herculean task. Smaller suppliers, often lacking the technological infrastructure or financial literacy, may hesitate to navigate the unfamiliar terrain. Additionally, aligning the interests of all stakeholders buyers, suppliers, and financial institutions - can be a complex undertaking, requiring careful negotiation and customized solutions. Addressing onboarding challenges necessitates collaborative efforts from industry leaders, technology providers, and financial institutions to develop user-friendly solutions, conduct targeted education programs, and incentivize participation for all parties involved.

The Transparency Tango

The intricate network of relationships within a supply chain often suffers from a lack of transparency. Access to accurate and real-time data on inventory levels, payment statuses, and potential risks is crucial for efficient SCF implementation. However, concerns about data privacy and intellectual property sharing can create stumbling blocks in establishing trust and open communication. Implementing secure data platforms, adopting standardized data formats, and fostering a culture of collaboration are essential steps in mitigating this challenge and unlocking the full potential of SCF's risk mitigation and optimization capabilities.

The Regulatory Rhapsody

The global nature of supply chains exposes them to a patchwork of regulations and legal frameworks. Navigating these complexities can be daunting for both buyers and suppliers, especially when cross-border transactions are involved. Differing accounting standards, tax regimes, and compliance requirements can create friction and hinder widespread adoption. Harmonizing regulations across jurisdictions, developing clear legal frameworks specific to SCF transactions, and providing readily accessible guidance for businesses remain crucial steps towards overcoming this challenge and ensuring smooth implementation of SCF across borders.

The Technological Time Signature

While technology unlocks immense potential for SCF, it also presents its own set of challenges. Integrating SCF platforms with existing enterprise resource planning systems requires expertise and investment, which can be a barrier for smaller players. Additionally, cybersecurity risks associated with handling sensitive financial data necessitate robust security measures and ongoing vigilance.

Key Market Trends

The Democratization Crescendo

As the barriers to entry crumble, SCF's melody is reaching previously unheard corners. Fintech platforms are democratizing access by developing user-friendly, cloud-based solutions, catering especially to smaller suppliers who were once isolated from this financial harmony. Furthermore, alternative financing models like blockchain-based platforms and peer-to-peer lending are emerging, offering flexible and cost-effective options for all players in the supply chain. This democratization, like a rising crescendo, will ensure that the benefits of SCF are no longer a privilege of the few, but a readily available instrument for growth and resilience for all.

The Collaborative Canon

The traditional soloist act of managing cash flow is giving way to a collaborative canon within the supply chain. Buyers and suppliers are increasingly recognizing the power of working together. Buyer-driven inventory financing models, where suppliers receive funding based on actual customer demand, are fostering closer collaboration and optimizing inventory levels. Additionally, data-driven platforms are enabling realtime visibility into financial information across the chain, creating an environment of trust and shared responsibility. This collaborative spirit, like a harmonious canon, will unlock new levels of efficiency and risk mitigation, strengthening the entire supply chain ecosystem.

The Sustainability Sonata

The melody of SCF is now echoing with the notes of sustainability. Green SCF solutions are emerging, offering financing specifically for environmentally friendly initiatives like renewable energy projects or sustainable sourcing practices. These solutions incentivize green practices within the supply chain, reducing carbon footprint and promoting resource efficiency. Furthermore, SCF can be used to support ethical sourcing practices by ensuring fair wages and responsible working conditions for suppliers, creating a more sustainable and equitable global community. This sustainability sonata, like a beautiful counterpoint, adds a dimension of social responsibility to the SCF movement.

The Technological Fugue

The technological revolution continues to play a pivotal role in the SCF narrative. Artificial intelligence (AI) is being utilized to analyze vast amounts of data, predict cash flow needs, and automate tasks, further optimizing the flow of funds. Blockchain technology, with its secure and transparent ledger system, is enhancing trust and visibility in cross-border transactions, making SCF a viable option for increasingly globalized supply chains. This technological fugue, where different elements weave together seamlessly, promises to further streamline processes, reduce costs, and unlock new possibilities for SCF implementation.

The Regulatory Ritornello

As SCF's global footprint expands, the need for a harmonized regulatory framework becomes increasingly vital. Governments and industry leaders are collaborating to develop standardized regulations and legal frameworks specific to SCF transactions. This includes tackling issues like cross-border data privacy, tax implications, and dispute resolution mechanisms. By addressing these regulatory roadblocks, the SCF narrative will avoid dissonance and maintain a clear rhythm of growth and adoption across geographies.

The Personalization Presto

The one-size-fits-all approach is fading away in the realm of SCF. Financial institutions and technology providers are recognizing the need for flexible and customizable solutions tailored to the specific needs of different industries, company sizes, and geographic locations. This personalization presto, like a dynamic flourish, ensures that the melody of SCF resonates with each participant, offering them the tailored solutions they need to thrive in the ever-evolving global market.

Competitive Landscape

Company Profiles: Detailed analysis of the major companies present in the global Supply Chain Finance market.

- Royal Bank of Scotland plc
- Mitsubishi UFJ Financial Group, Inc.
- BANK OF AMERICA CORPORATION
- · HSBC Group
- Eulers Herms
- · Citigroup, Inc.
- · BNP Paribas
- · JPMORGAN CHASE & CO.
- · Asian Development Bank
- Standard Chartered

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WHY DESIGN & COMPONENT ENGINEERS MUST PRIORITIZE ESG INITIATIVES

MICHAEL MARIANI

SG initiatives typically fall to executive leadership and sourcing and procurement teams to execute, but it's engineers who stand to make the biggest impact of all. Here's why.

ESG—which stands for environmental, social, and governance—exists for two reasons:

- 1. To hold corporations accountable for their impact on human beings and the environment
- 2. To help establish internal mechanisms in businesses to mitigate those effects

ESG began as an outgrowth of corporate social responsibility (CSR), but in recent years has evolved to become a vital framework used by consumers, investors, and major governing bodies to evaluate corporations and the ethics of their business practices.

ESG is now the driving force behind a raft of pending or fully enacted regulations at the national and international levels, including the Corporate Sustainability Reporting Directive (CSRD), the Corporate Sustainability Due Diligence Directive (CS3D), and the German Supply Chain Due Diligence Act (SCDDA).

To address this perspective shift, companies are starting to approach ESG's three pillars with a corresponding level of seriousness. A 2023 McKinsey Global Survey found that ESG topics were on the agenda for nine out of ten respondents, with many citing it as an opportunity to promote growth, satisfy regulatory requirements, and meet consumer expectations. Manufacturers are now reviewing their supply chains for human rights abuses and negative environmental impacts. They're also becoming more critical about the direct and sub-tier suppliers that contribute to their supply chain. In fact, many manufacturers are starting to hold their suppliers accountable to the same ESG principles they uphold as part of doing business with them.

Right now, the responsibility for upholding ESG principles rests primarily on strategic sourcing and compliance professionals. However, it's arguable that this burden shouldn't solely rest on those managing supplier relationships and part procurement. In fact, incorporation of ESG principles start at the inception of the product lifecycle with the engineers.

Why ESG principles should be a part of the engineering process

Design and component engineers play a crucial role in integrating ESG principles. After all, they are responsible for the creation and maintenance of commodities and their components. Whether designing from scratch or working with existing designs, engineers have the chance to reimagine manufacturing processes, explore innovative product designs, and integrate sustainable, circular materials into their company's products.

While impending ESG-inspired directives put pressure primarily on executive leadership and sourcing and procurement teams, it's engineers who stand to make the biggest impact by designing and creating commodities with ethical requirements in mind.

Ways to implement ESG initiatives into product design

Incorporate decarbonization strategies

One way engineers can tackle this challenge is through embracing decarbonization strategies. Decarbonization refers to the process of reducing or eliminating carbon dioxide emissions produced by human activities, including industrial processes.

According to the U.S. Department of Energy, "The crosscutting decarbonization pillars are energy efficiency; industrial electrification; low-carbon fuels, feedstocks, and energy sources; and carbon capture, utilization, and storage." These four pillars-which are inextricably related to the environmental dimension of ESG—should lie at the core of every business's climate change strategy, as they work to cut down their greenhouse gas emissions and attain the ultimate end-goal of reaching carbon neutrality. Although emissions objectives and approaches to decarbonizing are often managed by a company's leadership, engineers play a critical role in conceptualizing how these principles can be adopted and implemented at various design and manufacturing stages.

For example, maybe a wireless technology company is looking to increase its adherence to ESG. To achieve that end, executive leadership has set its sights on utilizing more renewable energy sources in its operations. While that mandate may be disseminated throughout the company, it falls on the organization's component and NPI engineers to think about how to incorporate solar, wind, or hydro power into their manufacturing processes. Specific considerations may include the types of parts being included in schematics and designs, equipment used during manufacturing, and potential modifications to the production process that integrate renewable energy sources.

Embrace sustainable materials

Sustainable materials are materials that are produced with either low environmental impact or by using renewable energy sources. In many cases, they're manufactured using recycled materials and can themselves be recycled when they reach the end of their useful life. A more sophisticated description can be found at Rutgers University's Center for Sustainable Materials, which defines the concept as "materials used throughout our consumer and industrial economy that can be produced in required volumes without depleting non-renewable resources and without disrupting the established steady-state equilibrium of the environment and key natural resource systems."

Using sustainable materials can have a substantial impact on an organization's efforts to adopt ESG and meet imminent ESG reporting requirements. These materials can:

- 1. Reduce a company's carbon footprint, especially as it pertains to Scope 3 emissions
- 2. Shrink the volume of waste they produce
- 3. Contribute to a larger, more enduring climate change strategy

And when it comes to the nuts and bolts of identifying and incorporating sustainable materials into a company's manufacturing processes, engineers have a level of control and influence that's difficult to match.

When they are developing, drafting, or modifying engineering BOMs (bills of materials), engineers have the opportunity to integrate more sustainable materials into their company's new or existing products. This might mean thinking about how to replace certain components for substitutes that are recyclable or produced with minimal environmental impact, or brainstorming designs for new products that incorporate materials like aluminum, hemp, and recycled plastics.

It's worth acknowledging that design and NPI engineers working for electronics manufacturers may

not be able to drastically change the way the current generation of phones, computers, modems, and industrial equipment are built. But over time, as ESG gains prominence in the eyes of regulatory agencies, investors, and even prospective employees, there will be a growing emphasis on engineering departments to take more decisive measures. Ultimately, they'll be tasked with swapping out single-use, nonbiodegradable materials and resources procured through destructive extraction practices for parts that better reflect our population's evolving ideals.

Utilize lifecycle analysis and other advanced sustainability tools

One of the innumerable new concepts to be conceived and propagated over the past decade or so, in this era of heightened environmental awareness, is the idea of sustainable materials management (SMM). The EPA defines SMM as a "systematic approach to using and reusing materials more productively over their entire life cycles." SMM compels organizations to examine the full lifespan of their products and the materials they use to manufacture them. This entails considering everything from the environmental costs of extraction to the waste produced at a commodity's end of life.

One of the most advanced methods currently available for implementing SMM into a company's operations is a technique called life-cycle assessment (LCA), or life-cycle analysis. An LCA measures the total environmental impact of a specific product, process, or service, analyzing each stage of its life-cycle and the corresponding energy use, carbon emissions, waste streams, and other material consequences. Because they're comprised of many long, complex mathematical calculations, LCAs run the risk of being interpreted and applied in a broad variety of ways. Fortunately, the International Organization for Standardization (ISO) has established best practices for carrying out LCAs through its 1400 series of environmental management standards.

These cradle-to-grave analyses have serious implications for the role engineers can play in ESG implementation. First, an LCA functions as a comprehensive blueprint encompassing the full scope of a given product's relationship to the environment. This complete picture allows engineers to identify every possible opportunity to deploy SMM and decarbonization strategies throughout manufacturing operations. They can use an LCA to recognize potential modifications along their material supply chain, rethink specific production processes based on emissions figures, or consider whether raw materials with high extraction costs can be utilized

at lower volumes.

More specifically, all the LCA data can help inform decisions about product redesigns and future models. The breadth and depth of information these assessments confer ensures that engineers and manufacturers are able to make strategic, efficient changes that reduce their environmental footprint and set them up for optimal ESG reporting compliance.

Reduce components that generate waste and increase risk

Consumer and industrial electronics can have hundreds, sometimes even thousands of individual components. For downstream manufacturers, this can mean a comparable number of direct and subtier suppliers. These direct and sub-tier suppliers create a vast and intricate supply chain that often spans multiple regions and continents. While this hyper-globalized supplier network has historically resulted in high efficiency, low production costs, and speedy manufacturing cycle times, the ESG framework also reveals some of this system's key drawbacks.

Excessively complex products with multitudes of components and the labyrinthine supply chains to match leave a sprawling environmental impact that affects everything from energy usage and carbon footprint to habitat loss. Moreover, this longstanding model also poses threats to ESG's social pillar. Organizations with greater numbers of suppliers are at a heightened risk of becoming complicit in unethical or illegal labor practices, unsafe working conditions, and negative impacts on local communities. While these consequences are by no means guaranteed, manufacturers beholden to large value chains must carry out exhaustive due diligence measures to protect against them.

One way design and component engineers can mitigate the environmental and social risks inherent to large, resource-intensive supply chains is by reducing the total number of components in a given product. Component simplification is, in some ways, a logical progression of the "eco-friendly" design philosophy that has proliferated since the 1990s, as engineers and designers began thinking about ways to incorporate sustainability and design for environment (DfE) principles into their work. By finding ways to cull unnecessary, redundant, or outmoded parts from their engineering BOMs and manufacturing processes, engineers can satisfy multiple ESG pillars and begin establishing a new paradigm for how companies think about product design. Further, they'll simplify their supply chains in a way that reduces energy and waste and leaves their businesses better-positioned to address the rising tide of ESG reporting obligations in the U.S. and Europe.

Engineers: the new vanguard of ESG initiatives

Throughout recent years, ESG mandates have largely been the responsibility of two groups: executive leadership and sourcing and procurement professionals. Executives, the thinking goes, should steer their companies toward ESG objectives through new strategies and initiatives. Sourcing and procurement teams should carry out supply chain due diligence efforts required to understand the company's risk profile and scope of vulnerabilities. But as this framework evolves into a constellation of regulatory directives distributed across the world's major markets, a third group—engineers—will become integral to the adaptation process.

While strategic sourcing experts can obtain the necessary documentation and conduct the risk assessments required by some of the forthcoming sustainability acts, they have considerably less control over the systemic changes that can meaningfully move the needle on a company's ESG impact. To do that, manufacturers need their engineering divisions to start thinking seriously about the environmental and social repercussions of how they conceptualize, design, and build their products. Implementing a new philosophy at the design and component engineering levels-where lasting change takes time, ingenuity, and feats of genuine innovation—will require more than just whipping together action plans and meeting ESG reporting requirements. But the potential payoff for companies, industries, and society more broadly, is immense.

The Z2Data Solution

Z2Data's integrated platform is a holistic data-driven supply chain risk management solution, bringing data intelligence for your engineering, sourcing, supply chain and compliance management, ESG strategist, and business leadership. Enabling intelligent business decisions so you can make rapid strategic decisions to manage and mitigate supply chain risk in a volatile global marketplace and build resiliency and sustainability into your operational DNA.

Our proprietary technology augmented with human and artificial Intelligence (Ai) fuels essential data, impactful analytics, and market insight in a flexible platform with built-in collaboration tools that integrates into your workflow.

Source:www.z2data.com

WTO UPDATE

TRADE, SUSTAINABILITY AND CLIMATE: WHAT IS AT STAKE 30 YEARS AFTER WTO'S CREATION?

The meeting of WTO trade ministers in Abu Dhabi (MC13) represented a historic opportunity to address the issue of trade cooperation for the environment and the associated challenges in industrial policy. For the first time, a ministerial discussion was held on these themes. What were the reasons for this?

In the world of international governance, trade policies and environmental policies have different legal and institutional histories which make it seem like they belong to different planets. Environmental and trade policies are set with little regard to their reciprocal implications, and their respective decision-makers have few opportunities to meet in international fora. While the law of multilateral trade is rooted in the principle of "non-discrimination", most environmental policies rely precisely upon the objective of discriminating between "good" and "bad" behaviour as regards the environmental impact of the production and exchange of goods and services. The tension between their basic principles is readily apparent.

Despite this, the governance architecture of the GATT/ WTO was up to now able to efficiently manage this tension and overcome potential divergences between the two sets of policies.

- Does the WTO recognize the values of environment and sustainability? Yes. Sustainable development is one of its statutory objectives.
- Does the WTO discuss trade and environmental issues? Yes. Several mandates and a dedicated forum (the Committee on Trade and Environment - CTE) have been assigned that purpose.
- Does the WTO negotiate rules related to sustainability? Yes. In 2022 a landmark agreement was adopted to prohibit subsidies for fishing boats practising illegal, unreported or unregulated fishing. Negotiations on subsidies reform have continued
 and almost succeeded - to build upon this agreement during MC13 to promote more sustainable fisheries.
- Does the WTO deal with trade disputes generated by environmental measures? Yes. Several cases of disputes arbitrated through WTO dispute settlement have outlined ways to reconcile environmental policies with trade policy requirements.(1)

Thirty years after the WTO's creation, new global environmental challenges of an unprecedented

magnitude have intensified, with climate change, biodiversity losses and pollution topping the list. The global community has engaged in an unprecedented effort to tackle these challenges, in particular through the adoption of the UN Sustainable Development Goals (SDGs), the Paris Agreement, the Kunming-Montreal Global Biodiversity Framework and the ongoing negotiations for a global plastics treaty. At MC12 in 2022, trade ministers recognized these global challenges and the contribution of trade and the WTO to the achievement of Agenda 2030.

A growing amount of evidence shows that global endeavours for the environment have significant trade implications requiring global trade coordination. The WTO registered a 25% increase in the number of environment-related notifications over the last 10 years. The environment-related entries in the Trade Policy Reviews of WTO member also grew over 70% during that period. The World Trade Report for 2023 took note of a ninefold increase in trade concerns raised at the WTO's Council for Trade in Goods between 2015 and 2022, out of which several were related to unilateral environmental measures, such as export restrictions on critical minerals, carbon pricing policies and regulations.

Beyond these trends, there are strong reasons to think that environmental challenges will put the multilateral trading system under increased tension in the future.

Firstly: the global scope of the environmental challenges. Major environmental policies seldom result from individual country preferences (such as protecting local waters or specific local species) but rather from global objectives recognized by the international community. Achieving these objectives requires global cooperation, which frequently involves dealing with the issue of "free-riding" in cases where some parties benefit from the actions without undertaking commitments of their own. This coordination challenge was identified very early by Professor JagdishBhagwati, an uncompromising free-trader economist:(2) one key question here lies in whether potential trade-restrictive measures against free-riders would be coordinated or would remain uncoordinated. It is naturally anticipated that non-coordination would lead to suboptimal outcomes due to increased trade uncertainty, tensions and disputes.

Secondly: the depth of the green economic transformation. For instance, "net-zero strategies" adopted by governments under the Paris Agreement

(and emulated at corporate level) aim at eliminating carbon emissions. To achieve their "Nationally Determined Contribution" (NDC) under the Paris Agreement, governments resort to a variety of instruments, such as carbon pricing policies (carbon taxes or emission trading schemes) regulation of production and products, or subsidies. These policies will impact trade costs and market signals, thus influencing companies' decisions, global supply chains and the capacity of developing countries to integrate into supply chains. Yet, there is currently no accepted methodology nor globally recognized trade forum to evaluate the equivalence of such policies, verify their non-discriminatory nature, and ensure their interoperability. Finally, the same tools can also be mobilized for industrial policy purposes. Trade tensions can easily proliferate from a lack of coordination.

Thirdly: environmental policies increasingly based on the differentiation of production and process methods (PPM). A cornerstone of the WTO approach to nondiscrimination is based on the capacity to compare similar products competing in a market (i.e. "like products"). Yet, the accepted meaning of similarity does not easily determine the differences in the sustainability footprint of different products when they do not appear in physical characteristics or qualities of the product itself. For instance, differentiation between products according to their carbon emissions intensity may raise technical and legal challenges. Concerns with some policies aiming at regulating and tracing production methods have already emerged in several WTO discussions. Some harmonized or mutually recognized environmental standards as well as some global convergence on carbon content calculations or traceability methodologies will be needed.

implementation things being equal, of environmental policies without sufficient trade coordination would increase the risk of trade fragmentation and potential for trade tensions. Conversely, cooperative approaches to environmental challenges could leverage the power of trade policy to support the achievement of global objectives and accelerate a just and green transition: to repurpose market incentives and fiscal resources (such as tariffs, subsidies or regulations) for sustainability objectives; to promote sustainable innovation through market liberalisation for a higher return on investments and economies of scale; to lower the costs of clean technology dissemination and transfers; to help developing countries take advantage of green opportunities.

For the past two years, three pivotal groups of WTO members have been driving substantial initiatives within multiple WTO dialogues: the Structured Discussions on Trade and Environmental Sustainability (TESSD), the Dialogue on Plastics Pollution (DPP), and the Fossil Fuel Subsidy Reform (FFSR). These efforts have culminated in a sophisticated mapping of the intricate interplay between trade policy measures, plastics

pollution, climate change, renewable energy transition, circular economy dynamics, and agricultural subsidies.

Under the leadership of the WTO Director-General, DrNgoziOkonjo-Iweala, the WTO Secretariat has provided members with resources for addressing the growing gap between trade, environment and climate cooperation. A "Trade Day" was organised for the first time at COP28 in Dubai last year, with many related discussions held in a "Trade House" jointly hosted by the International Chamber of Commerce, UNCTAD, the International Trade Centre and the WTO. The Secretariat has also issued several research publications (including the World Trade Report 2022 on climate change and international trade, and "Trade Policy Tools for Climate Action" in 2023), fostered an international task force on global carbon pricing, and facilitated a public-private sector dialogue aiming at convergence of "green steel" calculation methodologies and standards to support decarbonization of the sector.

The WTO can be used further as a platform to foster trade cooperation for the environment, in a flexible manner, taking into account different members' appetite, development needs, levels of ambition, and expectations for a just green transition. This can take place through exchanges of experience and best practices, as in the current CTE discussions, through improved transparency and problem solving as is currently taking place in different WTO committees and fora and through capacity building and consideration of collective trade actions/negotiations geared toward achieving "win-win-win" objectives for trade, development and sustainability, such as those proposed by some members and groups of members.

The ministerial conversation in Abu Dhabi has underscored a growing discomfort among many WTO members regarding the rise of environmental unilateralism, the limitations of current trade rules, and the "policy space" left open to address the challenges of ecological transition and industrialization. Thirty years after the establishment of the WTO, what its members must decide boils down to a simple question: do they want more WTO, meaning more trade multilateralism, to better tackle the challenges of green industrial transition and the preservation of global public goods?

Notes:

- 1. Such as famous cases known as "shrimp/turtle", "tuna/dolphin", "reformulated gasoline".
- "Trade and the Environment: Does Environmental Diversity Detract from the Case for Free Trade?" by JagdishBhagwati, Columbia University, and T.N Srinivasan, Yale University, January 1995, Discussion Paper Series N°718.

Source: WTO Update

AI AND SUPPLY CHAIN MANAGEMENT: OPPORTUNITIES AND CHALLENGES IN 2024

The retail sector, always known for its commitment to innovation, is placing an increased focus and growing resources towards supply chains. One area in particular that's gaining momentum is artificial intelligence (AI).

When it comes to innovation in the retail sector, the supply chain was traditionally never at the top of anyone's list. Then along came the pandemic, which quickly uncovered the many flaws in today's supply chains and made innovation and AI, in particular, a top priority—according to Gartner, 50% of supply chain organisations are projected to invest in AI and analytics applications through 2024. While we're still in the early stages of this journey, it's already clear how big of an impact AI will have on the supply chain. In this blog, I'll examine some of these benefits while delving into the challenges businesses will encounter over this journey and the steps they must take to succeed.

The Promise of AI : The impact that AI will have on today's supply chain is vast and far too long to include in this blog, so instead, I will focus on a few of my favorites.

Enhanced demand forecasting: By tapping into AI, businesses can more accurately forecast demand, which in turn allows them to streamline production. That means no lost sales due to out-of-stock goods and fewer products gathering dust on warehouse shelves. It also means greater levels of efficiency in production and growing profitability.

Inventory accuracy: Supply chain teams cannot succeed with an accurate line of sight into their inventory. Alpowered inventory management systems monitor precise stock levels around the clock and not only predict upcoming demand but take pre-emptive action to ensure all orders are fulfilled. As a result, employees can focus on other critical areas while the business reduces holding costs by only storing precisely what's needed at any given time.

Risk management: Risk Management is often referred to by another name, Supply Chain Risk Management (SSCM). When paired with AI, SSCM can scan vast amounts of data from disparate systems and provide teams with invaluable real-time insights. As we know from the pandemic, having instant access to the latest data across the entire supply chain is critical.

With SSCM, teams can track the flow of goods throughout the supply chain and instantly identify potential threats. This can include anything from developing weather patterns, transportation issues, or inventory shortages. But that's not all. These systems can provide instant, actionable insights that guide teams to take the best action. At the end of the day, this allows businesses to avoid potential downtime and delays and ensure

FIONA TAN, CTO, WAYFAIR

customers receive their orders on time, as promised.

The challenges of AI : As I said at the top, infusing AI into the supply chain does present some unique challenges.

Here's a look at a few that are top of mind.

Data security and privacy: Any time businesses turn to Al to fully maximize their data, the issue of security and privacy begins. Many companies are so focused on transforming the performance of their supply chain that they overlook potential threats such as the growing risk of cyberattacks.

Along this journey, companies must conduct regular risk assessments and establish security protocols that they and all suppliers adhere to. Next, implement an educational effort for all supply chain teams, including all partners, so they understand the latest threats, how to identify vulnerabilities and more. Each of these is vital and must be reassessed on an ongoing basis.

Cost and complexity: While we are all eager to experience the benefits, the reality is that infusing Al into your supply chain will take time. And, if you think it can be accomplished at a low cost, you're out of luck. But there are steps you can take to ease these burdens. The most important thing is to invest in the proper infrastructure. This includes more significant investments in hybrid cloud and digital infrastructure. These can enable greater agility, help streamline operations, and more.

Education: Naturally, AI alone cannot transform the supply chain. To achieve the desired level of success, businesses will need to upskill their employees, so they know how to leverage these new capabilities fully. This includes educating them on critical thinking and complex problem-solving so they can monitor the supply chain data and glean actionable insights from these AI-powered systems to make immediate and informed decisions. The idea of active learning will be critical to ensure employees are up-to-date with the latest innovations.

Looking forward : While the supply chain world has taken massive strides forward when it comes to innovation, we are just at the beginning. Especially when it comes to AI. As we look ahead into 2024 and beyond, emerging technologies such as blockchain and IoT will be deployed in conjunction with AI. Through these pairings, supply chains will scent to the next level as teams gain unprecedented levels of visibility and detail as well as entirely new levels of efficiency while ensuring they are meeting all environmental and ethical standards. Stay tuned for more updated in the year ahead.

Source: www.expresscomputer.in

EMERGENCE OF A NEW ERA IN STRATEGIC SUPPLY CHAIN DESIGN IN 2024

rom 2020 to 2022, businesses did not consider supply chain management system or design at all. Everyone switched to short-term thinking and with 2023, businesses began carefully lifting their heads to assess the situation and plan ahead. The time for pandemic-era thinking has passed. 2024 is believed to be the year of the strategic supply chain management system, but organizations must be cautious in their technology and vendor choices. However, with this year, we will witness the start of a new age in strategic supply chain management process and planning, a considerable departure from the short-term mentality that characterized the epidemic period. AWL India believes that after years of neglect, businesses are now recognizing the crucial role of technology in logistics and supply chain management along with proven efficiency, and competitiveness. As organizations negotiate this new terrain with caution, they are rethinking their technology and vendor options to optimize their supply chains.

The Shift from Short-Term to Long-Term Supply Chain Planning in 2023

Transitioning towards strategic thinking signifies a pivotal shift from reactive to proactive supply chain management. In 2023, as logistical challenges eased, businesses cautiously began looking ahead, conducting strategic reviews to bolster long-term resilience and efficiency. This resulted in a transition from the traditional short-term to strategic thinking. However, in 2024, firms are able to get their heads above water logistically and begin to look ahead warily. They are now able to conduct strategic reviews aimed at improving long-term supply chain resilience and efficiency. According to a poll, "41% of supply chain organizations are presently using advanced analytics in the form of end-to-end network modeling, with another 48% aiming to do so in the next two years."

End of an Era: Rethinking Supply Chain Sourcing Strategies Amidst Global Uncertainty

The era of endless low-cost suppliers is coming to an end. Companies are seeing the need to diversify and reevaluate their sourcing strategy. Deteriorating US-China relations, along with a failing Chinese economy, are forcing supply chain managers to reevaluate their dependence on China as the major industrial link in their supply chains. According to an analysis, "52% of industrials with operations in China are moving some sourcing or production away from the country to other cost-competitive locations in the attempt to de-risk their supply chains." These changes force businesses to weigh the cost, service, and risk of doing business in China and reconsider their near-shoring strategy. Sophisticated risk assessment algorithms assist them in understanding possible weaknesses before selecting providers in order to protect against interruptions and improve stability and resilience.

Emphasising Transparency and Traditional Evaluation Methods in Vendor Selection Amidst AI Fatigue

Customers are becoming more picky, seeking transparency that extends beyond product functioning. They are growing increasingly interested in the teams behind the technology, and their decisions are based on the company's mission and culture, as well as the skills of the individuals involved. Choosing a suitable companion requires thorough research. We at AWL believe that you can't trust a vendor if it won't divulge its investors, partners, or how and where its solutions are developed. Therefore, prospective partners need to communicate with you and involve you in their journey. Moreover, rather than just claiming to be Al-enabled, organizations should be expected to demonstrate their capabilities, back up their claims with proof, and provide real grounds for believing, signaling a return to a more traditional approach to purchasing decisions.

Furthermore, when interacting with suppliers, avoid utilizing unfamiliar lingo, ambiguous and confusing terminology, and unqualified assertions. We also believe that in 2024, the most popular AI applications will be short-term planning decisions and projections, such as monitoring and adjusting inventory reorder points and replenishment amounts.

Debunking the Hype Surrounding Supply Chain Digital Twins

In the complex world of logistics and supply chain management, the majority of companies want to tell you about their digital twin capabilities, but the term "Digital Twin" is a marketing trick that does not live up to its lofty label. Supply chain logistics companies in India do not always have all of the data (or quality data) linked to supplier orders and timelines, inventory levels, and manufacturing activities in one area, much alone across many operational systems. More discerning firms understand that a digital twin is a databaseaccessible picture of a segment of their supply chain. Whereas, supply chain digital twins are not identical! In the logistics industry, firms are creating new supply chain management system for the future. To do this, they create "Digital twins" of each futurestate supply chain option and assess them to choose which one to implement.

Navigating Uncertain Waters

The market being uncertain as usual has combined with the rise of new leaders. However, the industry peaked in 2021, with large venture capital investments in monitoring, visibility, and execution technologies. However, the flood of financial engineering concepts has now hit hazardous waters. According to AWL India Pvt Ltd, this year is projected to bring downturns, financial instability, and a reconsideration of strategies. As a part of the process, many technological vendors will fail, and new leaders will emerge. As the new normal for enterprises becomes a constant state of supply chain disruption, businesses must consider how to deal with these uncertain times and ongoing challenges. Leaders may get more visibility into the whole supply chain by developing agile and resistant supply networks, proactively minimizing potential risks, and recognizing and rectifying potential deviations in real-time.

Conclusion

In summary, the emergence of a new era in strategic supply chain design in 2024 signifies a significant shift towards long-term planning and resilience. As businesses navigate market volatility, leverage technological advancements, and respond to evolving customer needs, they must prioritize transparency, rethink sourcing tactics, and capitalize on emerging technologies. By doing so, organizations can not only survive in the face of unpredictability but also lay the foundation for long-term success and sustainable growth in the dynamic landscape of the future. Moreover, you can visit the official AWL India website if you're looking for supply chain logistics consulting.

Source: AWL India Pvt Ltd

WHY WE NEED THE NEXT GENERATION OF DIGITAL TRUST TECHNOLOGY

BRIJESH SALUJA

In a world of digital transformation, online data security is more important than ever. The need for trust technology that can protect our digital privacy and keep us safe from cybercrime is greater now than it has ever been. Unfortunately, however, the current generation of trust technology is not equipped to handle the massive volumes of data being generated by modern technology. This blog post will explore why we need the next generation of Digital Trust Technology (DTT) and how it can help us stay secure in the face of today's rapidly changing technological landscape. From enhanced encryption techniques to data analytics and Al-driven security features, read on to learn why DTT is essential for protecting our digital future.

The current state of digital trust technology : Over the past few years, digital trust technology has advanced by leaps and bounds. Today, there are a number of different ways to secure online transactions and protect personal data. However, as the use of digital technologies continues to grow, so do the threats to security and privacy One of the most pressing issues facing digital trust technology today is the need for better authentication methods. passwords are no longer enough to protect online accounts and data. As such, many companies are now turning to two-factor authentication (2FA) methods, which require users to provide two different forms of identification in order to access their account or perform a transaction.

Another major issue facing digital trust technology is data breaches. In recent years, we have seen a number of high-profile data breaches that have exposed the personal information of millions of people. These breaches often occur due to weak security protocols or due to human error. As such, it is important for companies to invest in strong security measures in order to protect their customers' data.

Finally, another issue that needs to be addressed is the problem of online fraud. With the increasing use of online services, there has also been an increase in instances of fraud. This includes things like phishing scams, where scammers try to trick people into giving them personal information or financial details by pretending to be a reputable company or individual.

Overall, the current state of digital trust technology is strong but there are still some areas that need improvement. By

The problems with current digital trust technology

The current digital trust landscape is complex and fragmented. There are a number of different technologies that aim to provide trust, but each has its own limitations.

Public Key Infrastructure (PKI) is the most common form of digital trust technology. PKI uses cryptographic keys to verify the identity of users and ensure that data is not tampered with. However, PKI has a number of weaknesses. First, it requires a central authority to issue and manage keys. This central authority can be a single point of failure that can jeopardize the entire system. Second, PKI is not well suited for dynamic environments where users are constantly joining and leaving networks. Finally, PKI is not very user-friendly, making it difficult for average users to understand and use.

Blockchain technology is another form of digital trust technology that has gained popularity in recent years. Blockchain uses a decentralized network of computers to verify transactions and ensure that data is not tampered with. This makes it resistant to attacks by centralized authorities. However, blockchain also has its own limitations. First, it can be slow and inefficient compared to other systems. Second, it is not well suited for small-scale transactions or interactions between individuals. Finally, blockchain technology is still in its early stages of development and needs to be further tested before it can be widely adopted.

Digital trust technologies are critical for ensuring the security and integrity of online information. However, the current landscape is complex and fragmented, with each technology having its

The need for the next generation of digital trust technology

The internet has changed the way we live, work, and play. It's also changed the way we trust. or rather, it's changed the way we don't trust. In a world where we can order a pizza with the click of a button, it's hard to believe that there are still so many ways that our personal information can be compromised online. But it's true. Every day, there are new stories about data breaches and cyber attacks.

And it's not just our personal information at risk.

Businesses large and small are being targeted by cyber criminals. The 2017 Equifax breach is a prime example of how damaging these attacks can be. 145 million people had their personal information exposed in that one incident alone.

Clearly, something needs to be done to improve digital security. That's where the next generation of digital trust technology comes in. This new breed of security solutions is designed to protect our most sensitive data from even the most sophisticated threats.

But why do we need this next generation of digital trust technology? Here are four reasons:

1. To keep up with the evolving threat landscape

As we mentioned before, cyber criminals are constantly finding new ways to exploit vulnerabilities in our systems. In order to stay one step ahead of them, we need security solutions that are constantly evolving as well. That's exactly what next-gen digital trust technology does.

What the next generation of digital trust technology should be

We need the next generation of digital trust technology because our current system is broken. We have seen too many examples of data breaches and cyber attacks that have resulted in the loss of personal information, money, and even lives. We need a system that is more secure and that can better protect our information.

The next generation of digital trust technology should be more secure, with better encryption methods and stronger authentication. It should be easier to use, so that more people can take advantage of it. And it should be able to adapt to the ever-changing landscape of the internet, so that we can always be sure that our information is safe.

Conclusion

Digital trust technologies are the future of secure online transactions and interactions. They provide a way to protect users from fraud, identity theft and other malicious activities. With the right tools, businesses can ensure that their data is safe and customers will have more confidence in their online experience. The need for this technology is greater than ever before, so it's important to stay informed on its development as we move into the next generation of digital trust services.

Source:community.nasscom.in

BRANCH NEWS

AURANGABAD BRANCH

IIMM Aurangabad conducted training program on "Business Budget – An important Tool to achieve organization's financial objectives."

on 24th February 2024 ; at MASSIA Auditorium, More Chowk , Waluj , Cha. Sambhajinagar. The faculty for this session was CA Prashant Asawa, Director, PS Asawa and Associates ,Cha.Sambhaji nagar.

The speaker explained the Objectives and Long-Term Goals of Budget. Planning, Review, Frequency and Flexibility required for the budget is discussed. Key steps in preparation of Budget, Various budgets verticals w.r.to Operations are discussed in detail during the session.

ECM of IIMM Aurangabad with faculty Mr. Asawa

Faculty Mr. Prashant Asawa explaining the Budget

Key steps in monitoring of the budget, Approval of Budget, how to review the monthly MIS are also understood by the audience. Around 250 people from Industries like Endurance Group, Bagla group, Morganite, Endress+Hauser, NHK Auto, Upturn Engineers and other pharmaceuticals and automobile based at Aurangabad attended this program. MASSIA members also attended the session.

Chief Guest for this event was IIMM National Council Member Mr. Sanjay Sanghai Executive Vice President (Group Purchase) Endurance Technologies Ltd. Mr.Sanghai briefed about the importance of personal Budget for lifetime. He has guided about the Risk Mitigation in budget, Quarterly review of the budget and Efficiency improvements. He has also given emphasis on Invest in oneself.

Mr.Sanghai guiding the audience

Proceedings by Mr.Milind Ghogale

MASSIA EC Member Mr. Rahul Mogale and Grind Master CFO Mr. Ravindra Gokhale are the dignitaries present on the dais.

Proceeding for the program and Introduction of faculty was done by Mr.Milind Ghogale.

Immediate Past Chairman Mr.K.Srihari, Chairman Mr.Sushant Patare, Vice Chairman Mr. Shrikant Muley; Hon. Secretary Mr. Paras Mutha, National council member - Dr.Narendra Joshi, Treasurer Mr. Lalit Lohade along with EC Members - Mr. Ameya Kolte, Mr.Prem Kadam ; Mr.Sudarshan Dharurkar, Mr.Yogesh Khoshe, Mr. Sunil Ved, Mr.R.D.Jaulkar, Mr. Sudhir Patil, took efforts to make this event successful. Mr. Milind Ghogale offered"Vote of Thanks." The program was concluded with the national Anthem and dinner.

PUNE BRANCH

International Women's Day Program : IIMM-Pune organized a program on the occasion of "International Women's Day" on 9th March 2024 at MCCIA Trade Towers, Pune. The event was centered on the theme "Role of Women in Supply Chain Management (SCM)" and featured insightful discussions by distinguished panelist representing diverse backgrounds. The program commenced with a warm welcome speech by Suhas Gawas (Chairman, IIMM-Pune), setting the stage for the enriching dialogue that followed. Mohan Nair (NC, IIMM) gracefully moderated the session, guiding the audience through thought-provoking discussions with our esteemed panelist.

Our panel of speakers included: Mrs. Shilpa Rajput -Counselor & Social Worker. Dr. Prajyakti Bakre - People & Organization Development Manager, Fujifilm Sericol India Pvt. Ltd. Sqn. Ldr. Anuradha Thakur – Director, Prian Energy.

Throughout the session, Mr. Nair adeptly steered the conversation, encompassed various facets of women's roles in SCM, touching upon their personal journeys, reflections on International Women's Day, and the empowerment of women in contemporary society. Thought-provoking questions such as the potential for women's advancement across organizational and functional domains and the relevance of household skills in SCM were thoughtfully addressed by our esteemed panelist.

Each panelist eloquently shared their perspectives, leaving the audience inspired and motivated. The interactive session also included a segment where the audience had the opportunity to engage with the panelist through open-house discussions, enriching the dialogue further.

The program was attended by 60 plus participants.

As the event drew to a close, Mr. Arjunsingh Rajput (Hon. Secretary, IIMM-Pune) expressed gratitude to all attendees and contributors. The program concluded with the felicitation of our esteemed panelist by Mrs. and Mr. Suhas Gawas (Chairman, IIMM-Pune), Mrs. and Mr. Terrence Fernandes (NC, IIMM), and Mrs. and Mr. K R Nair (Past VP-West & Present NC IIMM)

(Left to Right – Mr. Mohan Nair, Dr, Prajyakti Bakre, Sqn. Ldr Anuradha Thakur, Mr. Shilpa Rajput)

KOLKATA BRANCH

One day Seminar on 'The Ever-Expanding Realm of Contract and Contract Management in Outsourcing Driven Modern Business" on Saturday, 2nd March, 2024, at Hotel Senator, Kolkata

"The ever-expanding realm of contract and contract management in outsourcing driven modern business" was the theme of the seminar organized by the Indian Institute of Materials Management (IIMM), Kolkata at hotel Senator on 2nd March.

More than 75 supply chain management professionals from leading industrial establishments participated in the day-long seminar.

The speakers included Partha Pratim Sengupta, T K Mishra, O P Mishra with their vast experience of public procurement, Chetan Singh Rathore, head of contract, Tata Steel and Sugata Haldar, Director, Vikas Consulting. The sessions on block chain technology in contract management and artificial intelligence were highly interactive.

A panel discussion on "the probable impact on contract execution as a result of Houthi attack over Red sea" was conducted by Debasis Mallick, Chairman, Education Committee. The programme was masterminded by Rajib Kumar, Chairman, Seminar Committee. Koushik Roy, Chairman IIMM briefed the participants about the ongoing activities of IIMM.

Cocacola Plant Visit at Diamond Beverages Pvt. Ltd. Taratala, Kolkata- 88 : As part of their educational curriculum, the DMLM students of Kolkata branch were taken to Plant Visit, a Coca-Cola bottling plant on Saturday, 24th February. The students were received by Indranil Dutta, Diamond Beverages Pvt Ltd, P41, Taratala Road, Kolkata – 88, the HR manager. They were taken to the plant to watch the step by step bottling process of various types of beverage. The students were also taken to the warehouse to learn the documentation and outbound movement of the final product.

The students also interacted with Indranil Dutta, Manager, Quality Assurance Deptt. to learn how a multinational firm implements the process control to maintain the stringent norms of quality to attain customer satisfaction. 23 students from DMLM and 2 students from GDMM participated in this industrial visit.

VADODARA BRANCH

WOMEN'S DAY CELEBRATION (2024) - INTERNATIONAL WOMEN'S DAY CELEBRATION AT IIMM VADODARA ON 09th MARCH 2024 : International Women's Day is celebrated in many countries around the world. This life has no existence without a strong ally in women in every stage of life starting from motherhood to wife, sister and finally a daughter. It is a day when women are recognized for their achievements irrespective of Nationality, Ethic, Linguistic, Cultural, Economical or Political. It is an occasion for looking back on past struggles, accomplishment and more importantly looking ahead to the untapped potentials and opportunities that awaits future generations of women.

IIMM Vadodara also celebrated the Women's Day at its Office Hall on 9th of March 2024 with Theme: "Inspire Inclusion".

Different programmes related to the women were organized by our Chairperson Dr. Bharti Trivedi and her Team. All the present members participated in the event were over joyful and enthusiastically participated in the Event. The programme was half day programme, kept at IIMM Office 1st Floor Conventional Hall. Around 40 Invited Women Members and some IIMM Life Member's Spouse were present to mark this special day.

There was an inaugural speech by Chairperson - Dr. Bharti Trivedi welcoming all the delegates, followed by an inspirational speech for women's day by Mr. Lalbhai Patel – Former National President IIMM and a speech by Mr. Surendra V Dhumal, one of our Executive Member. To Commemorate this special day, we had with us Mrs. Ruchi Mehtawho with her mesmerizing classical dance performance enthralled everyone present.

Spiritual Speaker Soniya who is also a qualified Theatre actress and classical Singer spoke about "Be Beautiful Inside Out – Life ka Sundar Nazariya" i.e. on our Energy inside how to channelise that Universal Power, through our Own Self, which we can manifest on will or sometimes even before we desire or ask for it, things just happens for you. We also had with us Dr. Chaiti V Salunke who spoke on topic "Change Your Mind Set".

The celebration also included Special Awards for Women on their special achievements and other entertaining activities. It was a fun filled corporate celebration programme. The event was followed by Lunch.

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BANGALORE BRANCH

24thFebruary 2024 – Free onlineWebinar/ Lecture Program : IIMM Bangalore Branch organized a Free onlineWebinar on "DIGITAL SUPPLY CHAIN" on 24th February 2024. Speaker Mr. Saragur Srihari, Partner at WBN consulting in Digital Manufacturing Process Transformation.About 70 participants including Members from Various Sectors/ Organisations attended the Program.

4th to 6th March 2024 – In-House Training Program : Indian Institute of Materials Management, (IIMM) Bangalore Branch has conducted Three days In-house Training program on "SUPPLY CHAIN MANAGEMENT" at Hindustan Management Academy, Bangalore.20 Defence SCM Personnel Participants attended the Training Program. The Interactive Training Session has received very good feedback.

In-house Training Program 1st Day a session handled by Mr. M.S. Shankar Narayanan

In-house Training Program 2nd Day a session handled by Mr. Saragur Srihari

In-house Training Program 3rd Day a session handled by Mr. K.S. Mohan Kumar

Valedictory by Mr. M.R. Achyutha Rao, Branch Vice Chairman

A View of Training Participants with Certificates

RAEBARELI & KANPUR BRANCH

One-day seminar on "De-coding GeM and Its role in empowerment of MSMEs" is jointly organized by Indian Institute of Materials Management, Raebareli and Kanpur branch on 3rd Mar'23 at HotelTheMeera, Raebareli, Uttar Pradesh. The seminar was graced by the presence of Chief GuestMr Rajeev Khandelwal, Principal Chief Materials Manager, Modern Coach Factory, Raebareli and Guest of Honour, Mr. Nawazish Ali Saifi, Head/Materials Management, Bharat Heavy Electricals Limited, Jagdishpur, Amethi. The Seminar is attended by75 delegates from the adjoining industries and organizations like SGPGI, Lucknow, BHEL, Jagdishpur, Modern Coach Factory(MCF), Raebaerli, HAL Korwa, Norther Railway, Indira Gandhi RashtriyaUdaan Academy, Visaka Industries Limited, Saral Industriesetc.

Notable attendees of seminar were our National President, Mr. LR Meena, Prof.(Dr.) Suresh K Sharma, Co-Chairman/BoS& Jt. Chairman, CRIMM, Mr. GK Agnihotri, Vice President/North. Dr.Harendra Kumar, Coordinator Ayodhya Branch and Mr. Sapan Kumar Bandhopdadhay, NC Raebarelialso graced the occasion.

Chairman Raebareli branch,Dr.Nripendra Kumarand Chairman, Kanpur branch Mr Kailash Nathwelcomed all the guests and dignitaries. Chief guest Mr Khandelwal while addressing the gathering highlighted the role of materials manager in an organization. he also discussed the benefits of using the GeM platform, such as transparency, cost-effectiveness, and faster procurement. Guest of Honour, Mr Nawazish Ali Saifi informed the gathering that in BHEL, the procurement though GeM is increasing day by day. He advised the present MSMEs to register themselves on GeM to enhance the reach of its product & services.

Our National President Mr LR Meena appreciated the joint efforts of Raebareli and Kanpur branch for organizing the seminar on very relevant topic. He highlighted the role of supply chain professionals in industry and given some apt examples. He informed the gathering regarding the different course(s) &different activities of IIMM. He informed the gathering that through GeM ,Government of India addressed many issues of MSMEs namely limited access to the government market, technology & finance up to greater extent.

Prof.(Dr.) Suresh K Sharma, Co-Chairman/BoS& Jt. Chairman, CRIMMhighlighted the achievement of Raebareliand Kanpur branch. He informed the gathering about the activities of Centre for Research in Materials Management(CRIMM). He motivated the delegates to join IIMM as research fellows to further the objective of IIMM for growth of supply chain profession. Prof. Sharma while addressing, also discussed how the GeM has brought the transparency and speed in procurement process.

VP(North), Mr. GK Agnihotrielaborated how the GeM as one window solution for procurement of all types of goods and services is evolving. He was confident that brand GeMwill be synonym of government procurement in coming days.

The main speaker(s) of the technical session wereDr Nripendra Kumar, Chairman IIMM Raebatreli branch & AGM/BHEL, Sh Akash Verma, Manager/BHEL and Sh SB Singh/SGPGI.Dr. Nripendra Kumar discussed the role of GeM in empowering MSMEs. He informed the gathering that as on 2nd Mar'24, order value processed on GeMportal was356888 Cr in currentFYand out of that 49.77% order was placed on MSMEs by government entities.

Sh Akash Verma enriched the knowledge of participants on GeM functionalities and replied the queries.Sh SB

Singh informed about the various initiatives undertaken by GeM to enhance its user experience, including the introduction of new features, vendor ratings, and online training modules. The seminar highlighted the role of the GeM platform in supporting the government's 'Digital India' initiative and its contribution to promoting ease of doing business.

Finally, Rajesh Pathania, Chairman- Core Committee of the seminar presented the overview of seminar. He also proposed vote of thanks and remembered the contribution of allmembers of core committee of seminar including Mr AK Singh, organizing secretary, Smt. KshemlataKushwah, Jt. Organizing Secretary, Mr. Prashant Dwivedi, Chief MOC, Mr Uma Shanker Yadav, Treasurer, Mr. Junaid Ahmed, Chief Coordinator, and Mr. AbhayMehrotra , Chief Advisor, Mr Sanjay Awasthi, Add Advisor. He also thanked Raebareliand Kanpur branch executive committee for their support including Mr Rajendra Kumar Dixit, Life Member Kanpur branch, Mr. SU Khan, Vice Chairman, Mr. Avinash Shukla, Secretary, Mr. SC Shukla, Mr. BK Pandey, Mr. SK Trivedi, Mr. Ashish Jaiswal, Sh UC Tripathi, NC and Sh CB Sharma (Immediate Past Chairman).

Dignitaries on the occasion of One-day Seminar at Raebareli Branch on 3rd Mar'24

Lightening of the lamp on the occasion of One-day Seminar at Raebareli Branch on 3rd Mar'24

Attentive Delegate(s) on the occasion of One-day Seminar at Raebareli on 3rd Mar'24

BHARUCH BRANCH

Material Meet 4.0 was organised by Bharuch Branch at Hotel Loard." Sh.Sailesh Nigam "President-Reliance Industries Limited, graced the occasion as Chief Guest.

ROURKELA BRANCH

IIMM Rourkela Branch organized a Two days National Seminar on " Role of Make in India enterprise for sustainable Growth of Steel Industries on March 22-23, 2024 at Rourkela steel plant. Mr. Atanu Bhowmick Director incharge was the chief guest and Mr. Lalit Raj Meena National President IIMM presided over the program"The executive Directors of various disciplines from RSPL and Sail headquarter were present in the seminar."More than 200 delegates from SAIL and 80 other industries attended the seminar."

The technical sessions were of very high quality and appreciated by all the participants. 15 Manufacturing Industries placed their products in the exhibition "Mr. Alok Kumar Behera Chairman of the branch welcomed the dignitaries and delegates. Mr. Anil Kumar chief General Manager proposed vote of thanks

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EXECUTIVE HEALTH

EVOLUTION IN HEALTHCARE WITH DISRUPTIVE SCREENING TECHNOLOGIES

MANISH SINGHAL

Using novel testing methods involving blood, breath, saliva, eye and dental images, it might be possible to envision a future with non-invasive, affordable tests that can detect these diseases early, all while being patientfriendly.

It's 2030, you feel unwell, your body hasn't felt like itself for a few weeks now. You're worried it could be something concerning. You head to the nearest hospital and they wish to run a few tests. A decade ago, perhaps, you would be worried about whether your insurance covers the series of tests and machines you're about to be put through. Instead, all that the doctors require are some basic samples and the next thing you know, the display in front of you has text and graphics running across the screen, showing all possible areas of concern.

Healthcare screening today is riddled with problems far beyond just high cost and inconvenience. Most diseases serious illnesses and chronic ailments alike, lack preventative screening options and require specialists for diagnosis. Some require tests which are invasive and prohibitively expensive. Many of these diseases can be controlled if they're detected early, improving the patient's quality of life.

Using novel testing methods involving blood, breath, saliva, eye and dental images, it might be possible to envision a future with non-invasive, affordable tests that can detect these diseases early, all while being patient-friendly. There are some new modalities that have the potential to become mainstream in the near future.

Traditional biopsies and other testing methods are invasive, charged with potential complications, sometimes unrepeatable and cannot be performed when clinical conditions have worsened or when a tumor is inaccessible. Combining liquid biopsy with DNA-sequencing has shown promising results for the early detection of cancer.

During the past decade, liquid biopsy — the analysis of tumours using biomarkers circulating in fluids such as the blood — has received tremendous attention. The ability to detect and characterize tumours in such a minimally invasive and repeatable way could have considerable clinical implications, and huge progress has been made in the development of methods that can do just that.

Recently, circulating tumor DNA (ctDNA) and cell-free DNA (cfDNA) in blood plasma have emerged as promising cancer biomarkers. They have been demonstrated to have utility for non-invasive detection of cancer, personalized treatment of late stage cancer, and residual monitoring of cancer during and after treatment.

Identifying and enriching these biomarkers and combining them with a genetic profile of the patient have resulted in encouraging developments towards a multitude of early disease detection tests via blood.

There are certain Breath-based tests being introduced as well. New research suggests that the measurement of the volatile organic compounds (VOCs) produced by the body's metabolic activity is a powerful approach for health monitoring and disease detection. Volatile organic compounds (VOCs) are gaseous molecules that can be sampled quickly and noninvasively from breath. They can originate either from within the body (endogenous VOCs) or from external sources such as diet, prescription drugs and environmental exposure (exogenous VOCs). Research is ongoing to establish clearer connections between specific VOCs and the biological processes involved in their production. This can be used in cancer detection and inflammatory diseases such as IBD, Crohn's disease and fatty liver can be controlled with early diagnosis.

Additionally, there are saliva based tests. Saliva is being looked at more closely than ever for its diagnostic possibilities. In recent times, because of the improved efficiency of genomic and proteomic technologies, the use of salivary diagnostics in a clinical setting is becoming a reality, a trend somewhat driven by discoveries in testing for COVID-19. The wide spectrum of biomarkers present in saliva provides valuable information for clinical diagnostic applications and can be used to detect a wide range of conditions, ranging from oral cancer to autoimmune diseases.

Dental imaging is also being taken under consideration. This involves taking a number of photographs of the teeth and jaw region. Apart from identifying dental abnormalities such as cavities and malalignment of teeth, new research suggests dental images can also be used to detect a few other health conditions early. Based on the density of the lower jaw bone, it might be possible to detect bone loss, indicative of early signs of osteoporosis.

Fundus imaging is another such modality. It refers to the process of taking many photographs of the interior of the eye through the pupil. This can be used to detect conditions such as glaucoma, diabetic retinopathy and retinoblastoma (tumour in the eye) among others, allowing early and accurate diagnosis, especially changes in the eye of patients with diabetes and blood pressure. As a window to the brain, the retina provides a unique opportunity to study many ophthalmic and neurodegenerative diseases

Future of healthcare screening

Early detection of neurodegenerative diseases, cancer, metabolic disorders and other conditions can be life-altering for patients. In most cases, detecting a condition early enables a demonstrable treatment plan, leading to higher survival rates and quality of life. Improving patient outcomes can also help in reducing the burden on stressed healthcare systems across the world that are teetering on the brink of collapse. This vision is bolstered by research work that is underway on breath and saliva based tests and recent FDA approvals of multi-cancer liquid biopsies. Correlations are also being established between dental and fundus imaging and various other diseases that are hard to detect today. A future of noninvasive, quick tests to diagnose ailments early may prove to be a reality, paving the way towards a more proactive approach to healthcare.

Manish Singhal, Founding Partner, pi Ventures

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IIMM HEADQUARTERS AND BRANCHES

IIMM NHQ : Plot No. 102 & 104, Sector-15, Instl. Area, CBD Belapur, Navi Mumbai-400614. Tel.: 27561754 / 2756 5831, Fax : 022-27571022 E-mail NHQ : admin@iimm.org, members@iimm.co.in E-mail Edu. Wing : iimmedu@iimm.co.in, Website : www.iimm.org

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ALWAR BRANCH Indian Institute of Materials Management 15, Shopping Centre, Shanti Kunj, Alwar - 301001 (Rajasthan) Ph.: 09731245655/ 07877745655 Email: iimmalw@gmail.com

AURANGABAD BRANCH

Indian Institute of Materials Management Third Floor, T-01, Khivansara, August high Street, Ulka Nagari, Aurangabad - 431005. Mob: 09423455983/9765402066 E-mail : iimmau@rediffmail.com

ANKLESHWAR BRANCH Indian Institute of Materials Management Indian institute or waterials wanagement C/o Arvind Patel, Chariman -IIMM, Ankleshwar "Skau Chemicals Plot No.7405, G.I.D.C. Ankleshwar, 393002, Quijarat. Mobile : 9824179390 / 9714759799 Email : adm@skauchem.com

AYODHYA BRANCH

AYODHYA BRANCH Indian Institute of Materials Management Dev Nagar Colony, Raebareli Road (Near Naveen Gallamandi) Ayodhya (Faizabad) – 221001 Mob # - 09415402109/ 9415780361 iimmayodhya@gmail.com

BHIWADI BRANCH

BHIWADI BRANCH Indian Institute of Materials Management Flat No. 507, Block – 23 Cosmos Green, ALwar By pass Road Bhiwadi (Rajasthan) – 301019 Mob: # 09828588567 Sunilgarg638@gmail.com

BANGALORE BRANCH Indian Institute of Materials Management # 304, A-Wing, III Floor, Mittal Tower # 6 M G Road, Bangalore - 560001 Ph.: 080-25327251/52 E-mail : iimmbg@airtelmail.in

BHARUCH BRANCH Indian Institute of Materials Management Indian Institute of Materiais Marian 303, Vinay Complex, Near Dudhdhara Dairy, Old NH Highway # 8, Bhaurch Ph.: 02642-283223 E-mail: iimmbhaurch@gmail.com

BHILAI BRANCH

Indian Institute of Materials Management Room No. 326, 3rd Floor, Ispat Bhawan, Bhilai Steel Plant, Bhilai - 490001 Ph.: 0788-2892948/2222170

BHOPAI BRANCH

Indian Institute of Materials Management 4/9-B, Saket Nagar, Bhopal - 462024

BILASPUR BRANCH

BILASPUR BRANCH Indian Institute of Materials Management C/o. Gen. Manager (MM) South Eastern Coalfields Ltd., Seepat Road, Bilaspur - 495006 (CG) Ph.: 07752-241087/75014 E-mail : iimmbilaspur2015@gmail.com

BOKARO BRANCH

Indian Institute of Materials Management Purchase Dept., Ispat Bhawan, Bokaro Steel City - 827001 Mob: 08986873175/8986874786 E-mail : iimmbokarobranch@gmail.com

BURNPUR BRANCH

Indian Institute of Materials Management New Materials Bldg. Ground Floor, Near CRS Store, SAIL-IISCO Steel Plant Burnpur - 713325 (West Bengal) Mob: 9434776532/9434777365

CHANDIGARH BRANCH

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Indian Institute of Materials Management SCO 19-B, Swatik Vihar, Mansa Devi Complex, Sector - 5, Panchkula - 134114 Ph. : 0172-2556646/4654205 E-mail : iimmchandigarh2@gmail.com

CHENNAI BRANCH

Indian Institute of Materials Management 4th Floor, Chateau D'Ampa, 110 (New # 37), Nelson Manickam Road Aminjikarai, Chennai - 600029 Ph.: 044-23742195/23742750 E-mail : chn.iimm@gmail.com iimmchennai@gmail.com

COCHIN BRANCH

Indian Institute of Materials Management GCDA Shopping Complex, Kadavanthra PO, Kochi - 682020 (Kerala) Ph.: 0484-2203487/9400261874 E-mail : iimmkochi@bsnl.in

DEHRADUN BRANCH

Indian Institute of Materials Management C/o. 30, Kalindi Enclave, Balliwala Chowk, Lane No. 2, Dehradun - 248001 (U.K) Ph.: 0135-2795486/9410397734

DHANBAD BRANCH

Indian Institute of Materials Management O/o. GM (MM), B C C L, Koyla Bhawan Koyla Nagar, Dhanbad - 826005 (Jharkhand) Cell # 09470595238 E-mail:iimmdhanbad@gmail.com

DURGAPUR BRANCH

Indian Institute of Materials Management Office of ED (MM) 3rd Floor Ispat Bhawan, SAIL, Durgapur Steel Plant Durgapur - 713203 Tel: 0343-2574303

GANDHIDHAM BRANCH Indian Institute of Materials Management

1,2,3, Plot # 356, Ward-12B, Tagore Road Gandhidham -370201 (Kutch) Gujarat Tel: 02836-231711/231745 E-mail: iimm_gim@rediffmail.com

GOA BRANCH

Indian Institute of Materials Management 124/8, UMASHRIPAD, behind NSD Near Vishal Megamart, Anand Estate Dabolim Vasco-da-Gama, Goa - 403801 Mob: 09923425037

GREATER NOIDA BRANCH

Indian Institute of Materials Management B-193, Swam Nagri, Opp: J P Golf Course Greater Noida - 201308 E-mail : iimmgreno@gmail.com

HARIDWAR BRANCH

HARIDWAR BRANCH Indian Institute of Materials Management C/o. 97-B, Vigyan Kunj, Indian Institute of Technology, Roorkee, Haridwar - 247667 E-mail: iimmharidwar@gmail.com

HOSUR BRANCH

Indian Institute of Materials Management Opp: Hosur Bus Stand, By Pass Road Above Axis Bank, Palaniyappa Building Hosur - 635109 (TN)

HUBLI BRANCH

Indian Institute of Materials Management Karnataka Chamber of Commerce of Industry Building, 1st Floor, Jayachamaraj Nagar, Nr. Nehru Ground, Hubli - 580020

Hyderabab Branch Indian Institute of Materials Management Building no. 6-3-347/9/4/C, First Floor, Union Bank Building, B/H Model House, Dwarkapuri Colony, Punjagutta Hyderabad-500082. Email: iimm.hyd1719@gmail.com, Mob.: 9949872010

INDORE BRANCH

Indian Institute of Materials Management 03, Rajmahal Colony, Ext Manik Bag Road, Indore - 452007 (M.P), Mob: 9826625417, Email: dr.stmgmt@gmail.com

JAIPUR BRANCH

Indian Institute of Materials Management C/o. Mr. Purushottam Khandelwal
 48, Mohan Nagar, Gopalpura Bypass, Jaipur - 302018 Cell: 09799299157 E-mail : iimmjaipur1@gmail.com

JAMSHEDPUR BRANCH

Indian Institute of Materials Management Room # 6, Russi Modi Centgre for Excellence Jubilee Road, Jamshedpur - 831001 Ph.: 0657-2224670/2223530 E-mail: iimm_jsr@yahoo.co.in

JAMNAGAR BRANCH

JammaGAR BRANCH Indian Institute of Materials Management C/o. Mr. Jayesh Joshi, Riddhi Engineering Works, 111, Madhav Complex, Opp: DKV Collage, Jammagar - 361008 0288-2750171 / 9824263869 riddhieng@yahoo.com

KANPUR BRANCH

KANPUK BKANCH Indian Institute of Materials Management C/o. Kailash Nath, 58, New Defence Colony, Opp. Krishna Nager Telephone Exchange, G.T.Road, Kanpur-208007 UP Mob.: 7887000150, 9935032495 kailashnath119@gmail.com agnihotri.hal@gmail.com

K G F BRANCH

Indian Institute of Materials Management C/O Santosh Kumar, Manager Materials, EM Division, BEML Limited, KGF-563115, Mob: 09743977684, Email: emvh@beml.co.in

KOLKATA BRANCH

Indian Institute of Materials Management 8/B, Short Street, Kolkata - 700017 Ph.: 033-22876971/22834963 E-mail: iimmcal17@gmail.com

LUCKNOW BRANCH Mr. P.K.Baipai

Indian Institute of Materials Management 86/106, Kurmi Tola, Maqboolganj, Lal Kuan, Lucknow - 226018 Ph.: 9415752999, Res. 6307080159

LUDHIANA BRANCH

Indian Institute of Materials Management C/o. Guru Nanak Industrial Corporation Adj. Hero Cycle Ltd., G T Road, Ludhiana - 141010 (Punjab) Ph.: 0161-5212268 E-mail : iimmldhbr@gmail.com

MUMBAI BRANCH

Indian Institute of Materials Management 2-A, Arihant Bldg, Above Bhandari Co-op Bank Ltd., Goregaon (E) Mumbai - 400063 Ph.:022-26863376/26864528/26855645-46 E-mail:iimmbom@gmail.com

MUNDRA BRANCH

MUNDIKA BRANCH Indian Institute of Materials Management C/o Paresh Satasiya DURLABH SINGH KHALSA No. B/04/03, Sanudra Township, Old Port Road, Distt, Kutch, Mundra - 370421 (KUTCHH). paresh.satasiya@adani.com

MYSORE BRANCH

Indian Institute of Materials Management Anubhav Udyog, K-64, Hootagalii Ind. Area, Mysore - 570018 (Karnataka) Ph.: 0821-4282124 E-mail : mysoreiimm@gmail.com

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MANAGALOKE BRANCH Indian Institute of Materials Management C/o. Exclusive Shipping & Exports, IV floor, Ashirwad Building, GHS Road, Mangalore -5750001, Te: 0824-2440913, Mob: 9845080613, Email: phillipcc13@hotmail.com

NAGPUR BRANCH

Indian Institute of Materials Management 404, Suryakiran Complex-1, Bajaj Nagar, Nr. VNIT Gate, Nagpur - 440010 Ph.: 0712-2229446 E-mail : iimmnagpur@gmail.com

NALCO NAGAR BRANCH Indian Institute of Materials Management C/O Mr. S N Baghar, H. No. A-04, Shree Ganesh Villa, Bikash Nagar, PO-Turanga, Distt: Angul-759123 (Orissa) Cell: 09437081126 Email: snbaghar@nalcoindia.co.in

NASIK BRANCH

NASIK BRANCH Indian Institute of Materials Management 1, Parag Bldg, Patel Lane # 4 College Road, Nasik - 422005 Ph.: 0253-2314206 E-mail : iim_nsk@bsnl.in

NEW DELHIBRANCH

NEW DELHI BRANCH Indian Institute of Materials Management U-135, Vikash Marg, Shakrapur Near Laxmi Nagar Metro Stn, Delhi - 110092 011-41354969, E-mail:admin@immdelhi.org Mob: 098 18 66 42 67 www.iimmdelhi.org

UNE BRANCH

Point Branch Indian Institute of Materials Management Pratibha Towers, Plot # 22, Old Pune Mumbai Road, CTS # 15/2, Above TVS Showroom, Wakdewadi, Pune - 411003 Ph.: 7276010854 E-mail : iimmpune1@gmail.com

RAE BARELI BRANCH Indian Institute of Materials Management 497, Near CMO Office, Jail Road, Rae Bareli -229001 iimmrbl@yahoo.com, iimmrbl@gmail.com

RANCHI BRANCH

Indian Institute of Materials Management Gen Manager (MM) Office, Central Coalfields Ltd.,Darbhanga House, Ranchi - 834001, Tel.: 08987784115 E-mail : abinashkthakur@gmail.com

ROURKELA BRANCH

Indian Institute of Materials Management TH-01(West) Sector - 4, Near Mahila Thana Dist: Sundergarh, Rourkela-769002 (Odisha) Cell: 08260711943/08895501056 Email: iimm.rourkela@gmail.com

SAMBALPUR BRANCH Indian Institute of Materials Management C/o GM, MM HOD Deptt. Mahanadi Coal Fields Ltd., Jagruti Vihar, Burla Distt. Sambalpur, Orissa – 768020. Email: rkhansacl@gmail.com

SINGRAULI BRANCH

SURAT BRANCH

TRIVANDRUM BRANCH

E-mail:iimmtvpm@gmail.com

Ashwini Marg, Udaipur - 313001 Ph.: 0294-2411969/2421530

E-mail: iimmudpr@sancharnet.in

UDAIPUR BRANCH

iimmudpr@gmail.com

VADODARA BRANCH

M: 7043959060 E-mail : iimmbrd@yahoo.co.in, iimmvadodara@gmail.com

VAPI BRANCH

SINGRAULI BRANCH Indian Institute of Materials Management Clo Office of GM(MM), MM Deptt. Northern Coalfields Ltd., P.O. Singrauli Colliery, Dist. Singruali – 486889. Madhya Pradesh Email: aciniar@amail.com Email: sainins@gmail.com

Indian Institute of Materials Management C/o. Genral Manager, Krishak Bharati Co Ltd, PO: Kribhaco Nagar, Nr. Kawas Village, Surat-394515, Tel: 0261-2802032 E-mail : pravendrasingh@kribhco.net

IRIVANDRUM BRANCH Indian Institute of Materials Management TC-22/1820, 2nd Floor,Future House Temple Road, Sasthamangalam Thiruvanathapuram - 695010 Ph. : 7994512438

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Indian Institute of Materials Management

V V NAGAR BKANCH Indian Institute of Materials Management Champs Engineering, 1-52, GIDC Estate, Vitthal Udyognagar - 388121 Tel: 02692-230440/ 09825028050

Email: harshad.champs@gmail.com

C/o. CMA Bhawan, Akkayyapalem JN. Akkayyapalem Highway, Visakhapatnam - 530016, Ph.: 9885310934/7093802468 E-mail : iimmvizag@gmail.com

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IIMM Materials Management Review

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From Left to right Sh Rajeev Dy G M, Mr Rajiv Puri GM and Head Procurement and Mr Rakesh Bhalla CFO all from SMLISUZU, Mr S K Sharma Former National President, Mr Rajesh Gupta Chairman Chd branch and Mr Kiran Rampal Vice Chairman Chd branch

CRIMM NEWS

Board of Governors meeting of CRIMM was held on 13th March 2024. Mr. Lalit Raj Meena - National President, Dr. Suresh Kumar Sharma - Jt. Chairman, Mr. Malay Mazumdar-Addl. Jt. Chairman, Mr. Asok Dasgupta - Chief Advisor & Prof. Emeritus, Mr. Koushik Roy–Member, Mr. D N Chakravarti–Member, Mr. P.M. Bidaappa -Sr. VP, Former National Presidents Mr. S.K. Sharma and Mr. Lalbhai Patel attend the meeting and decided to make more efforts for enrollment of Research Fellows with an approach of more quality Research Papers.

It was also discussed that IIMM may offer special subsidy to the three YMM competition toppers for their enrollment in CRIMM Fellowship.

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