

ISSN 2320-0758

PRICE ₹ 50/-

MATERIALS MANAGEMENT REVIEW



Volume 17 - Issue 10 Date of Publication : 1-8-2021 No. of Pages: 1-60 August 2021

FUTURE OF LOGISTICS- SMART LOGISTICS



GOVERNMENT ANNOUNCES LAUNCH OF NATIONAL LOGISTICS EXCELLENCE AWARD



Logistics

From the Desk of The National President



Dear Members,

Greetings from National President!!

India is slowly emerging out of the deadly second wave. Although the rate of vaccination is not very encouraging, our only solace is that the active cases of COVID-19 is falling and the daily positivity rate has more or less flattened. Although the fear of third wave is looming large on us, large section of our upwardly mobile population seem to care less. Recent photographs as reported in the media shows highly crowded tourist destinations and COVID norms not being adhered to. Although the local administration has imposed certain restriction to control the situation, unless there is no discipline within the people at large, we are preparing a ground for third wave. We all should take the responsibility to ensure that the third wave is prevented. The revival of economic activity and hence the economy will largely depend on how we are able to prevent the repeat of COVID wave.

We have successfully renewed our AICTE approval for PGDMM and PGDSCM&L till June 2022. We have also started our July admissions and with the AICTE approval in place, I take this opportunity to urge all stakeholders to rigorously promote both our AICTE approved courses. We have also ensured that the study material is made available to our students within time. Very soon we will also be circulating the time table for the various semester examination of all our ongoing courses. 30th June the last date of considering the membership strength ended with the membership numbers crossing 8000 mark with only two defaulting branch, viz. Mundra and Hosur. We need to jointly ensure that we are able to cross the magical 10,000 membership number which is very much achievable. Our immediate milestone is to ensure that all the branches complete their audit and submit their balance sheet on time. NHQ is regularly sending reminders following up with the branches to complete their audit as well as giving the audit status of various branches. I urge all branches who are yet to start the audit of their branch financials to complete the exercise on priority so that the respective branch AGM can be conducted by end August 21.

Many of our branches have consistently remained active by conducting various online webinars which has greatly benefitted the MM fraternity. Few of the branches have also scheduled offline seminars within coming days. Successful conduct of these seminar will greatly help in confidence building measure and very soon we can have business as usual. But we all should ensure strictly following all COVID related protocol

I take this opportunity to wish all IIMMites and their family members a good health and a safe stay.

With Warm Personal Regards



MALAY MAZUMDAR

National President, IIMM

Email: Malay_mazumdar@yahoo.co.in

From the Desk of Chief Editor



Dear Members,

Logistics firms are key market forces which connect industries to market by providing various services like transportation, warehousing, Inventory management, Freight Forwarding etc. which are not only important for national economy but also important for global economy. For example, Apple's iPhone uses components from more than 200 suppliers in 43 countries without compromising on efficiency and resilience in the flow of goods between and within countries by use of smart logistics.

The impact of Covid 19 was first felt in China in late 2019 leading to lockdowns and border closures that restricted the movement of goods resulting in to crippling of global supply chains. In India too, Covid 19 impacted in a big way. Border restrictions have led to a temporary stoppage in human mobility and transportation activities, which resulted in unparalleled pressure on shipping and road freights, and created severe impediments for international trade. Transportation disruptions have led to substantial interruptions in actual goods flows, product mobility, and have affected the entire supply chain, thereby leading to operations shutdown, sales loss, late deliveries, and reputational loss. This is not all. As per Indian Chamber of Commerce (ICC), logistics sector has lost about Rs 50, 000 crore which has also disrupted the business cycles and supply chains.

Going forward, logistics industry is of critical importance and has a definite role in bringing economy back on track. Besides connecting various stakeholders like markets, suppliers and business areas like material handling, warehousing, packaging, supply chain management, procurement, and customs service, logistics sector played its part in combating Covid -19 which includes transportation of medical supplies and essential commodities for survival throughout the country. As the focus of SCM shifts from least overall cost of Supply Chain to resilience, adaptability and anticipation, role of logistics becomes more important with due consideration of absorption of trace & tracking technologies, advance evaluation of alternate routes and better equipped, trained & motivated drivers.

According to the National Skill Development Corporation (NSDC), the logistics sector has emerged as the top employment-generating sectors in India in the aftermath of the coronavirus disease. Rapid and technological advancements in digital technologies, changing consumer preferences due to e-commerce, government reforms, and shift in service sourcing strategies are expected to lead the transformation of the Indian logistics ecosystem.

Further initiatives from Govt. of India under "Aatmanirbhar Bharat and Make in India", will provide an impetus to MSME, which contributes about 1/3 of GDP. Here again, logistics sector has to be on its toes to get these MSMEs back to upward trajectory and ultimately lead to the economic growth.

In a nutshell, India's fight against Covid 19 and economic growth in the future is heavily dependent on how rapidly our logistics sector evolves. This is essential not only for generating employment or providing broad social benefits to farmers and low-income workers but also for competing with the rest of the world in terms of last-mile connectivity, efficient transportation, timely delivery, etc. A big role is envisaged for 3PL & 4PL providers.

I hope SCM Professionals appreciate and adapt to the changing scenario of logistics at the earliest.

H. K. SHARMA
mmr@iimm.org



*IIMM is a charter member of
International Federation of
Purchasing & Supply Management*

Chief Editor & Publisher

H.K.Sharma, Sr. V.P.

Core Committee :

Ashok Sharma, President 5M India
V. K. Jain, Former ED, Air India
Tej K Magazine, Management Advisor
T.G.Nand Kumar, Former Head MM, TERI

National President :

Malay Chandan Mazumdar
ONGC Petro Additions Ltd.

Editors :

G.K.Singh, IPP
J.S. Prakash Rao, NS&T
Surendra Deodhar, VP (West)
Shivaji Sinha, VP (East)
Dr. Harendra Kumar, VP (North)
Dr. Rabi Narayan Padhi, VP (South)
Dharamraj Kumar, VP (Central)
Prof.(Dr.) V. K. Gupta - IMT, Ghaziabad
PROF.(Dr.) Goutam Sen Gupta,
Vice Chancellor - Techno India Univ.

Correspondence :

MATERIALS MANAGEMENT REVIEW

Indian Institute of Materials Management

4598/12 B, 1st Floor, Ansari Road,
Darya Ganj, New Delhi - 110 002.
Phones : 011-43615373
Fax: 91-11-43575373
E-mail: iimmdelhimmr@gmail.com &
mmr@iimm.org
Website : www.iimm.org

Printed at :

Power Printers,
4249/82, 2 Ansari Road, Daryaganj,
New Delhi - 110002



MATERIALS MANAGEMENT REVIEW

Volume 17 - Issue 10

(August 2021)

CONTENTS

PAGE NO.

■ PREPARINGFOR POST COVID-19 SUSTAINABLE SUPPLY CHAIN	5
■ COMMODITY INDEX	9
■ COVID -19: IT'S A POSITIVE IMPACT ON MOTHER EARTH	10
■ SUPPLY CHAIN MANAGEMENT TAKES CENTRE STAGE: COVID-19 IMPLICATIONS	12
■ CAPACITY UTILIZATION - WHY 85% IS BETTER THAN 95%-	14
■ PHARMACEUTICAL SUPPLY CHAINVULNERABILITIES: ROLE OF INFORMATION TECHNOLOGY	16
■ DISCUSSION ON E-INVOICE SYSTEM	19
■ EXPORTS: INDIA'S WINDOW OF OPPORTUNITY	21
■ DEPLOYING A CUSTOMER-FOCUSED SUPPLY CHAIN STRATEGY WITH 4RS (RESPONSIVENESS, RESILIENCY, RELIABILITY AND REALIGNMENT) MODEL	22
■ GOVERNMENT TAKES VARIOUS INITIATIVES TO BOOST INDUSTRIAL MANUFACTURING; TAKES STEPS TO UPLIFT THE STARTUPS AND PROMOTE 'VOCAL FOR LOCAL' CAMPAIGN AND E-COMMERCE	26
■ RE-EXPORT OF WAREHOUSED GOODS TO NEPAL & BHUTAN	27
■ PUBLIC PROCUREMENT (PREFERENCE TO MAKE IN INDIA), ORDER 2017 - REVISION; REGARDING	30
■ ECOMMERCE TRENDS THAT ARE POWERING ONLINE RETAIL FORWARD	39
■ FLUID COMPUTING FOR SUPPLY CHAIN MANAGEMENT : NEXT ECONOMIC DISRUPTION	42
■ FREIGHT TECHNOLOGY: HOW EMERGING TECH IS RESHAPING THE LOGISTICS INDUSTRY	45
■ WTO UPDATE : MEMBERS DISCUSS ECONOMIC AND TRADE IMPACT OF NATURAL DISASTERS ON SMALL ECONOMIES	47
■ WHAT CONDITIONS MAKE INDUSTRY 4.0 FEASIBLE?	48
■ GUIDELINES ISSUED BY THE BOARD UNDER SECTION 194-Q READ WITH SECTION 206C(1H) OF THE INCOME-TAX ACT, 1961	50
■ DECARBONISING TRANSPORT: REDEFINING MOBILITY POLICIES IN INDIA	53
■ INITIATIVES UNDER "MAKE IN INDIA" AND "STARTUP" PROGRAMMES; MAKE IN INDIA INITIATIVE FOCUSES ON 27 SECTORS UNDER MAKE IN INDIA 2.0. 'STARTUP INDIA' INITIATIVE GENERATES MORE THAN 26000 EMPLOYMENT IN TAMIL NADU IN THREE YEARS	54
■ EXECUTIVE HEALTH	58

NO. OF PAGES 1-60

Edited, Printed & Published by :

INDIAN INSTITUTE OF MATERIALS MANAGEMENT

4598/12 B, 1st Floor, Ansari Road, Darya Ganj, New Delhi - 110 002.
Phones : 011-43615373 Fax: 91-11-43575373
E-mail: iimmdelhimmr@gmail.com & mmr@iimm.org
Website : www.iimm.org

(Published material has been compiled from several sources, IIMM disowns any responsibility
for the use of any information from the Magazine if published anywhere by anyone.)



PREPARING FOR POST COVID-19 SUSTAINABLE SUPPLY CHAIN

-PROF (DR) GOUTAM SENGUPTA

VICE CHANCELLOR OF TECHNO INDIA UNIVERSITY, WEST BENGAL, INDIA AND
JOINT CHAIRMAN OF (CRIMM) RESEARCH WING OF IIMM

goutamsenguptacbs@gmail.com

Abstract : Coronavirus COVID-19 had disrupted the supply chains of all enterprises and particularly those who had global sourcing links. During the last two to three decades most of the supply chains had gone global in order to reap the benefits that global supply chains provide with respect to integral cost, total quality and time to market. COVID -19 had changed abruptly the demand as well as the supply side of the chain and the supply chain actors were rooted out from the bases. As the impact of this was severe and shall completely re-define the demand, supply, consumption pattern of the post COVID supply chains, it was felt necessary to undertake a research study involving supply chain practitioners and experts across industry domains to understand how the solutions for post COVID supply chains shall emerge. This article enumerates the backdrop and details of the aforesaid research work.

Keywords : COVID-19, Sustainable, Delphi Technique, Paired Comparison, Scenario Building Exercise (SBE), Supply Chain Integration, Agile Supply Chain, Sourcing, Quick Response Manufacturing (QRM)

Introduction : The COVID-19 pandemic is a global crisis without modern parallel. During the last two to three decades, most of the growing companies have gone global based on globally connected supply chains. The coronavirus pandemic exposes the vulnerability of such globally connected supply

chains which shall face major reshuffle and monumental restructuring. As the outbreak spreads, supply chain vulnerability shall multiply and ultimately may lead to total collapse. The rapid spread of the pandemic may bring another shockwave, exposing global manufacturing to a stress test. The era of globalization, as we used to know, may come to a standstill with the world witnessing emergence of a new era.

The COVID-19 pandemic has hit the business world in an unprecedented scale and speed. It has resulted in standstill in many businesses, work suspension in production units, disruption to global manufacturing industries and their supply networks, dwindling workforce availability and fear of extinction of specialized skills, plummeting consumer confidence in disrupted supply chain. This has led to acute stress on working capital for business. Owing to the globalization of supply chain ecosystems over the previous 2-3 decades seemingly no company is immune.

Questions facing the supply chain fraternity as global lockdown is lifted in Post COVID scenario are: How consumer behaviour may change or go for a paradigm shift?, How shall supply chains be affected due to changing consumer behaviour?, What shall be the emerging consumer demands?, What are the areas businesses should stress and focus on now and in the coming months to prepare for the post COVID era?

COVID 19 can be termed as a Black Swan event which shall completely disrupt the global economy. It may cause the collapse of global supply chains. COVID-19 is causing large scale disruption to global supply chains with further impacts yet to be fully felt. Understanding the supply chain both upstream and downstream is critical to the continued effective management of a business' supply chain operations. One unique attribute that differentiates this crisis from others in recent years is its worldwide effect on both demand and supply side of the supply chain. Furthermore the consumption pattern within the supply chain shall get completely disrupted. Actors in the supply chain will go through a paradigm shift with respect to human psychology. A major challenge the situation poses is to deal with the "Bullwhip Effect" as a result of major swings in inventory due to panic buying and hoarding of consumers, the impact of this sudden demand being magnified as it moves upstream in the supply chain.

There is not an iota of doubt that there shall be gargantuan re-shuffling of supply chains in the post COVID-19 period. The question is how to prepare and tune the organizations for this new era so that they are ready with robust, innovative and adaptable supply networks sustainable enough to take on the next "Black Swan".

This article attempts to unfurl this critical challenge and throws light on some critical domains emerging through this COVID-19 scenario to better prepare the organizations in the post COVID-19 world with regard to their supply chains.

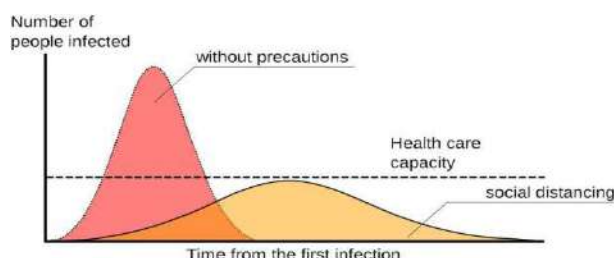
Literature Review : 'The concept of black swan events was popularized by the writer Nassim Nicholas Taleb in his book, The Black Swan: The Impact of The Highly Improbable (Penguin, 2008). The essence of his work is the world is severely affected by events that are rare and difficult to predict. The implications for markets and investments are compelling and need to be taken seriously'. (Investopedia, Brian J Bloch, June 25, 2019)

However, the concept was challenged by Nouriel Roubini who said these are predictable vulnerabilities. "In my 2010 book, Crisis Economics, I defined financial crises not as the 'black swan' events that Nassim Nicholas Taleb described in his eponymous bestseller but as 'white swans'. According to Taleb, black swans are events that emerge unpredictably, like a tornado, from a fat-tailed statistical distribution. But I argued that financial crises, at least, are more like hurricanes: they are the predictable result of built up economic and financial vulnerabilities and policy mistakes." (Nouriel Roubini, The Guardian, International weekly edition, 19th Feb 2020)

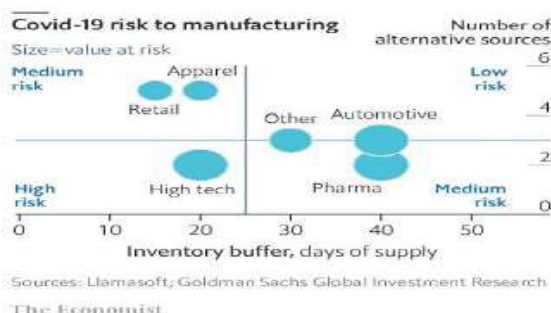
Whether we agree to either of these two philosophies, it is clear that not enough measures were taken by the nations to make the supply chains resilient leading to COVID-19 Supply Chain Collapse. The companies and nations were busy to create supply chains for their narrow gains, going miles apart from supply chain global integration.

#Nouriel Roubini is a professor at NYU's Stern School of Business and was senior economist for international affairs in the Clinton White House's Council of Economic Advisers. He has worked for the IMF, the US Federal Reserve and the World Bank.

For the crisis of today, the literature review points out crisis emerging out of uncertainty of predictability of measures like **social distancing**. Work of Neil J Rowan, John G Laffey published in Elsevier, volume 725, July 2020 highlights this uncertainty.



While talking about solutions for post COVID-19 Supply Chains, author Amitava Sengupta, entrepreneur media, inc, April 2020 highlighted concept of 'supply chain control tower' a single platform for all actors, but seem to be originating from his own perspectives and not necessarily through a research methodology.



The above figure depicts the supply chain and manufacturing risks associated with the COVID-19 pandemic. Industries which have good inventory buffers and more number of alternate supply sources are at lower risks. Accordingly, automotive industry is at a relatively lower risk in terms of their supply chains while retail and pharma are at medium risk and high tech industries are at a higher risk.

Research Method : The following research techniques were deployed for collection of primary data and its scientific analysis:

Delphi Technique
Paired Comparison Matrix
Decision Evaluation Matrix

There were total of 225 respondents participated in this survey conducted during the period March 2020 to mid of April 2020. Survey was conducted maintaining social distancing protocols through webinars on digital platforms. Most of the respondents were supply chain practitioners and experts and few were from educational institutions teaching and consulting in supply chain domain. All participants remained anonymous minimizing the risk of 'bandwagon effect' or 'halo effect', allowing free expression of opinion, encouraging open critique which facilitated admission of errors while revising earlier judgements. Respondents participated in four webinars and five rounds of iterations. In the initial round, there were 120 ideas generated and at the end of fifth round it converged to twelve different proposals. Table below gives the breakup of respondents:

Respondent Demography

Type of organizations	No. of respondents
Global Multinationals	15
Large Transnational Companies	10
National Companies	35
Consulting Companies	04
Educational Organizations	35
Supply Chain Students	30
MSME Sector	96
TOTAL	225

Results and Analysis : The proposals were tabulated under following broad headings:

SL. NO. PROPOSAL

- 1 Quick Response Manufacturing (QRM)
- 2 Supply Chain Integration
- 3 Scenario Building Exercise (SBE)
- 4 Supply chain visibility
- 5 Sourcing
- 6 Automation
- 7 Industry 4.0
- 8 Safety stock

9	Forecasting	E	Adaptability	1	5
10	Machine learning	F	Ease of implementation	1	5
11	Agile supply chain	G	Capability to cut across (industry segments)	8	2
12	Multiskilling				

The respondents converged to the following seven criteria for the purpose of evaluation of proposals:

Cost Effective, High Impact, High Sustainability, Ability to Absorb shocks (Black Swan), Adaptability, Ease of Implementation, Capability to cut across (industry segments) Paired Comparison was done to arrive at weightage of each factor.

EVALUATION MATRIX

IDENTIFY CRITERIA FOR SELECTION

IDENTITY	CRITERIA	SCORE	RANK
A	Cost effective	2	4
B	High impact	5	3
C	High sustainability	9	1
D	Ability to absorb shocks (Black Swan)	8	2

NB : Scores and Rank derived from Paired Comparison Table.

PAIRED COMPARISON CRITERIA

COMPARISON	POINTS
Major difference	3
Medium difference	2
Minor difference	1
No difference	0

PAIRED COMPARISON TABLE

A	B	C	D	E	F	G
	B2	C3	D2	E1	A2	G2
	B	C1	D2	B2	B1	G1
		C	C0	C2	C2	C1
			D	D2	D2	D0
				E	F1	G3
					F	G2
						G

DECISION MATRIX

5 POINT SCALE 5 – EXCELLENT 4 – VERY GOOD 3 – GOOD 2 – FAIR 1 – POOR	DESIRED CRITERIA	HIGH SUSTAIN ABILITY (C)	ABILITY TO ABSORB SHOCKS (BLACK SWAN) (D)	CAPABILITY TO CUT ACROSS (INDUSTRY SEGMENTS) (G)	HIGH IMPACT (B)	COST EFFEC TIVE (A)	ADAPTA BILITY (E)	EASE OF IMPLEME NTATION (F)	TOTAL	RANK
PROPOSALS	WEIGHTAGE FOR CRITERIA	9	8	8	5	2	1	1		
QUICK RESPONSE MANUFACTURING (QRM)		4	3	5	4	3	3	3	132	5
SUPPLY CHAIN INTEGRATION		5	4	5	5	4	4	3	157	2
SCENARIO BUILDING EXERCISE (SBE)		5	5	5	4	4	5	3	161	1
SUPPLY CHAIN VISIBILITY		4	4	4	4	2	3	2	129	6
SOURCING		4	4	4	4	5	5	4	139	4
AUTOMATION		3	3	3	4	2	2	2	103	11
INDUSTRY 4.0		4	3	4	5	2	3	2	126	7
SAFETY STOCK		2	4	4	3	2	2	2	105	10
FORECASTING		4	3	4	3	2	2	3	116	9
MACHINE LEARNING		3	2	4	4	2	2	2	103	11
AGILE SUPPLY CHAIN		4	4	5	5	4	5	4	150	3
MULTISKILLING		4	3	4	3	3	5	4	122	8

Conclusion :

From the detailed research study conducted and considering the ranks of the various proposals, it can be concluded that the following interventions to a large extent may prove to be effective in preparing for a post COVID-19 sustainable supply chain:

1. Scenario Building Exercise (SBE)
2. Supply Chain Integration
3. Agile Supply Chain
4. Sourcing
5. Quick Response Manufacturing (QRM)

After the COVID 19 situation dissipates, the world shall see companies fall into one of two categories:

Companies that didn't do anything hoping that such disruption won't ever happen again. These companies are taking a highly risky gamble.

There will be firms that learn from this crisis, garner and implement robust interventions that shall make them well prepared when the next crisis strikes (next Black Swan) and equip them with solutions (as mentioned above) when disruptions occur.

The second group of organizations shall emerge as winners in the long run.

References :

1. Hofman, D. and Cecere, L. (2005), "The agile supply chain", Supply Chain Management Review, Vol. 9 No. 8, pp. 18-19.
2. Koh, S. L., Saad, S. and Arunachalam, S. (2006), "Competing in the 21st century supply chain through supply chain management and enterprise resource planning integration", International Journal of Physical Distribution & Logistics Management, Vol. 36 No. 6, pp. 455-465.
3. Lancioni, R. A. (2000), "New developments in supply chain management for the millennium", Industrial Marketing Management, Vol. 29 No. 1, pp. 1-6.
4. Power, D. J., Sohal, A. S. and Rahman, S.-U. (2001), "Critical success factors in agile supply chain management-An empirical study", International Journal of Physical Distribution & Logistics Management, Vol. 31 No. 4, pp. 247-265.
5. Reefke, H., Ahmed, M. D. and Sundaram, D. (2014), "Sustainable Supply Chain Management—Decision Making and Support: The SSCM Maturity Model and System", Global Business Review, Vol. 15 No. 4 suppl, pp. 1S-12S.
6. Roy, S., Sivakumar, K. and Wilkinson, I. F. (2004), "Innovation generation in supply chain relationships: a conceptual model and research propositions", Journal of the Academy of Marketing Science, Vol. 32 No. 1, pp. 61-79.
7. Yusuf, Y., Gunasekaran, A., Adeleye, E. and Sivayoganathan, K. (2004), "Agile supply chain capabilities: Determinants of competitive objectives", European Journal of Operational Research, Vol. 159 No. 2, pp. 379-392.
8. Investopedia, Brian J Bloch, June 25,2019
9. Nouriel Roubini, The Guardian, International weekly edition, 19th Feb 2020
10. Neil J Rowan, John G Laffey published in Elsevier, volume 725, July 2020
11. Amitava Sengupta, entrepreneur media, inc, April 2020

● ● ●

COMMODITY INDEX

Commodities	Days's Index	Prev. Index	Week Ago	Month Ago
Index	3341.7	3344.0	3360.4	3361.7
Bullion	7636.5	7652.8	7774.3	7672.5
Cement	2463.7	2463.7	2463.7	2463.7
Chemicals	1629.1	1629.1	1650.1	1658.7
Edible Oil	3047.9	3009.3	2911.2	2832.2
Foodgrains	2413.4	2409.6	2390.3	2415.0
Fuel	3644.4	3644.4	3644.4	3569.3
Indl Metals	1919.9	1919.9	1919.8	1919.8
Other Agricom	2283.2	2265.4	2283.8	2276.0
Plastics	2346.9	2352.0	2435.4	2687.1

Source: ETIG Database dated 27th July 2021

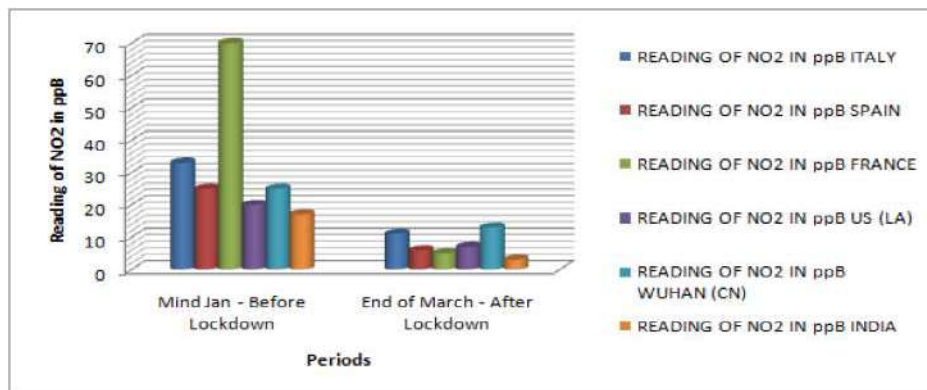
COVID -19: IT'S A POSITIVE IMPACT ON MOTHER EARTH

JAYANTA CHAKRABORTY

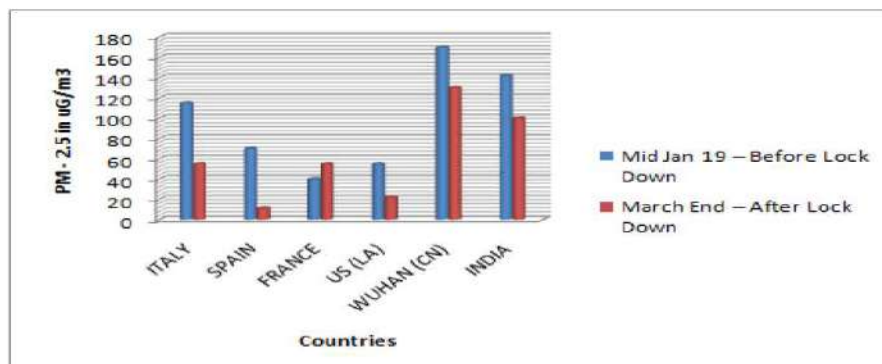
At the time of writing this article, the Corona Virus Disease of 2019 (COVID-19) is at its peak and almost affected more than 200 countries in the world. It's very contagious in nature and widely spread across countries. As of today, there is not a single sure shot medicine or vaccine available for this disease, and scientists across the globe are working hard on this. Day by day people are dying due to the same and with a combination of drugs, many people are getting recovered also. Most of the countries around the globe are in complete or partial lockdown based on the intensity of the infection and the spread of the virus. This is a really tough time for the human race. But, every cloud has a silver line and every negative aspect has some positive impact.

Let's talk about Mother Earth and its feelings amidst COVID-19. For the last 2 months' time, there is no vehicular pollution, factory pollutant, or any sort of manmade pollution. Further, it gives a positive boost to increase the flora and fauna of Mother Earth. All other species got a chance to explore the resources of nature without any disturbance from mankind. We are hearing positive environmental news like replenishment of the Ozone layer, reduction of air and water pollution, balancing in aquatic life due to no fishing in many of the places. People are more diverting from non-vegetarian food to vegetarian food across the globe.

The question of an hour is whether Mother Earth has pressed the reset button to rejuvenate herself in the form of COVID-19? We should not go by just feelings and news but we should go by facts. To find the answer, let's see a couple of parameters in terms of atmospheric pollutants and compare their levels before the lockdown period and recent days.



Reading of Nitrogen Dioxide (NO2) in Parts Per Billion (ppB)



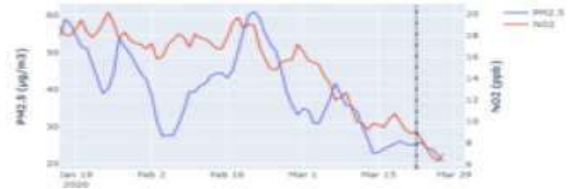
Reading of PM - 2.5 in uG/m3

From the above data, it is apparent that there is a substantial natural correction towards the quality of the atmosphere. Another area will also prove that the lockdown has improved nature. The temperature of Ahmedabad, India is on 31st March 2019 was 42 / 24 p C as compare to the temperature on 31st March 2020 is 38 / 21 p C. It's a significant decrease in the temperature of the atmosphere looking to decrease in air pollutants.

Pollutant Levels in Wuhan



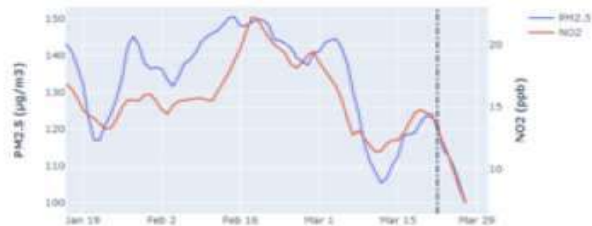
Pollutant Levels in Los Angeles



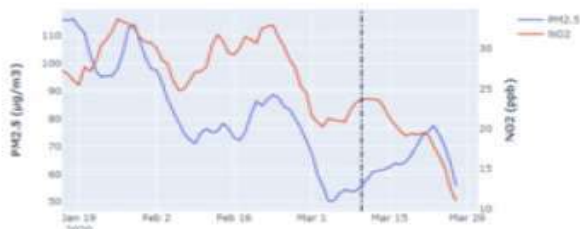
Pollutant Levels in France



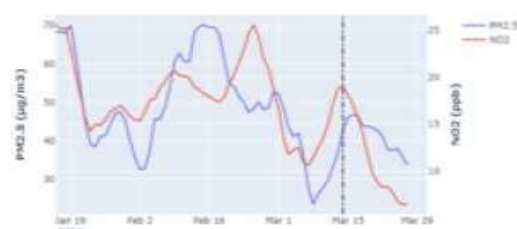
Pollutant Levels in India



Pollutant Levels in Italy



Pollutant Levels in Spain



POLLUTION LEVELS ON GLOBAL SCENARIO

It is evident that due to this lockdown, fishing is virtually closed across the globe. Hence there will be a fair amount of chance of marine life growth due to non-fishing!!!

All the above facts are proof and re-established that environmental quality is degraded by humans and we have to take strict measures to monitor, control and reduce such activities to rejuvenate mother earth. An example was given and explained burning presentation that how governing rules and certifications like Green Building, Smart City concepts can be emphasized while making a new building.

We, the sourcing and supply chain professionals are in various industries and can take a lead role in the prevention and sustenance of low pollution.

I hope we all will relook into the existing systems and modify them in a way, so we can do minimum disturbance to mother nature.

Source:sourcingandsupplychain.com

● ● ●

SUPPLY CHAIN MANAGEMENT TAKES CENTRE STAGE: COVID-19 IMPLICATIONS

SUNIL BHARDWAJ

Overview : The ongoing pandemic and its implications for supply chains have been far-reaching, to say the least. The integrated nature of supply chains and their globally and regionally dispersed structures have exposed the fault lines and vulnerabilities even further.

The economic and humanitarian crisis brought about by Covid-19 will take time to abate. Micro, small and medium enterprises have struggled to survive. What began as a supply shock eventually resulted in a demand shock too.

Moreover, the challenges caused by lockdowns, un-lockdowns, covid hot-spots, and red zones have constrained supplies, production, warehousing, and logistics operations. The concept of Lean Operations/ Manufacturing and JIT (Just In Time) is being questioned. Experts are now talking about JIC (Just In Case) to ensure supply chain resiliency and continuity.

One could view the trends, developments, and constraints from multiple dimensions – People, Process, Systems, Functional, Upstream, and Downstream.

Over the past few months, the events have reiterated and reinforced the need for supply chain agility, flexibility, responsiveness, sustainability, risk management, and working capital controls. As they say – **Cash is King after all!**

Data management issues have also become very critical – particularly those related to cybersecurity and master data controls. Customer focus and market intelligence have proved to be critical drivers for success.

The need for investments in supply chain automation and digitalization has been accelerated owing to visibility and transparency constraints across the supply chain.

People, Processes, and Systems



Emerging Paradigms – People, Processes & Systems

Let's take a look at some emerging paradigms concerning people, processes, and systems.

People

Lifelong learning will become the norm moving forward. Re-skilling and up-skilling at periodic intervals would become necessary to survive and thrive. Soft skills such as emotional intelligence would play a key role to facilitate holistic decision-making. Gender diversity and inclusion at the workplace or in the virtual world shall bring in much-needed balance to organizational structures.

Job roles and designations would be refined to include both 'Specialists' and 'Deep Generalists'.

Supply chain career paths would continue to be driven by "T" skills – the horizontal line of the alphabet indicating the breadth, gamut, and scope of functions/sub-processes/disciplines within our domain; the vertical line indicating proficiency or expertise in one or more areas – for example – Demand Planning, Strategic Sourcing, Transportation, Warehousing, etc.

If we delve deeper into the people's aspects: the primary driver, engine, and nerve center for lasting success – certain core skills come to the fore.

The following skills would need to be cultivated and strengthened given the uncertainties and challenges that we face:

- Business Analytics and Data Management
- Problem Solving
- Critical Thinking
- Supply Chain Strategy
- Situational Leadership
- Technology Landscape and Applications
- Cross-Functional Management (Multi-Disciplinary Approach)
- Customer Orientation

Process

Processes across the chain would need to be reviewed, audited, and updated to reflect the market and customer needs. Well-designed, optimized and flexible processes shall go a long way in ensuring stability and would prove to be invaluable in terms of system or technology configuration inputs.

It is suggested to use the time-tested and battle-

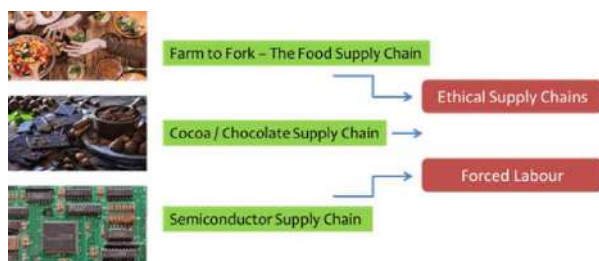
hardened SIPOC methodology to ascertain and ensure the correct inter-linkages between suppliers, inputs, outputs, and customers.

Supply chain finance processes would gain traction in my opinion. Trade financing and working capital management processes would need to be defined and implemented clearly.

Systems : The emerging trends indicate a future moving in the direction of 'Everything-As-A-Service' encompassing software, assets, physical infrastructure, plant and machinery, production equipment, transportation, warehousing, etc. The 'On-Demand' and 'Pay per Use' model would prove to be beneficial for the service provider and receiver alike. Simulation-based, real-time, and interconnected systems would augment people's practices and processes. Human-Material interface systems would garner attention in addition to touchless and contactless workforce management systems.

Supply chain analytics systems would continue to move up the learning curve from descriptive to diagnostic to predictive to prescriptive maturity.

Triple Bottom Line



Ethical Practices : We are all aware of the role and importance of the Triple Bottom Line. Whether we look at it from a People | Profit | Planet perspective or Social | Economic | Environmental prism, it is essential to note that financial success cannot be sustained in the absence of sound social and environmental practices and frameworks. In my opinion, economic success is an outcome or a fallout of the other two aspects.

In this context, it is pertinent to mention the growing sensitivity towards ethical practices in the supply chain. The graphic indicates three supply chain examples and highlights the need to track and eliminate forced labour and unethical practices that violate prevailing laws, regulations, and statutes.

Further Areas of Focus



Flexible Connected and Data-driven Platforms

As can be seen in the graphic above, flexible, scalable, connected, and data-driven platforms should be given precedence over stand-alone functional systems. Moreover, Environment, Health, and Safety systems should be integrated with other modules and compliance must be tracked at periodic intervals through dashboards and other visual analytics tools.



Risk | Sustainability | Demand Shift

As stated in the overview earlier, supply chain risk management is being viewed as an integral part of future supply chain design. Upstream and downstream risk mapping and system alerts could assist different nodes of the chain to initiate timely actions.

The last 6-7 months have witnessed a notable shift in demand for certain categories of essential items through the online space. It appears this trend might continue given the benefits that consumers enjoy through this channel (refer to the graphic above). Needless to say, this would have implications for reverse logistics and supply chain.

Finally, sustainability initiatives, practices, and reporting centered on resource usage, process design, product design, energy consumption, carbon footprint, CHG emissions impact, and scope for re-use, return, refurbish and re-purpose will become the norm rather than the exception since they are deeply intertwined with other priority areas.

Way Forward

Supply chains that are visible, transparent, agile, responsive, collaborative, and well connected would enable and facilitate sustained business growth. A daunting supply chain challenge awaits us – the production, storage, and distribution of billions of vaccines globally. However, given the collective talents of the fraternity, this too shall be overcome with innovative ideas and solutions.

All said and done, these are wonderful times to be a part of this domain, function, profession – something that was taken for granted has gained prominence – thanks to the pandemic.

Source: sourcingandsupplychain.com



CAPACITY UTILIZATION

- WHY 85% IS BETTER THAN 95%-

RAJIVE GOEL, VICE PRESIDENT, HINDUSTAN COMPOSITES LTD.

goel@hindcompo.com

Whenever we all talk about capacity, the immediate thought or focus is the Utilization Ratio. The capacity owner can be an industrialist, in which case capacity utilization shall be production output of a machine or a factory shop-floor.

The capacity owner can also be a businessman, like a restaurant owner or a shop-keeper. In whose case the capacity utilization shall be number of customers served.

Or the capacity owner can be an individual, where it boils down to “kitna mileage deti hai, when buying a new car”.

Defining Capacity

The capacity that is usually stated is always Theoretical or Base Capacity.

The capacity detailing states that the output shall be achieved under ideal conditions; where there are no detractors or external factors influencing.

Any “capacity entity” does not operate in a stand-alone way or in silo. It always works in tandem or with the support of many other factors or entities. This is true for a factory, for a restaurant and an individual car.

The machines on the factory shop-floor requires support of man (machine operator), material (inventory), money (spares for machine) and management (managerial supervision and planning) and so on.

The kitchen of a restaurant requires support of man (cook and waiters), material (tables, chairs, interior decoration), money (grocery, vegetables) and management (captain, billing desk).

And, finally a car shall also need support of man (driver – self or employed), material (petrol), money (to pay toll, challan) and management (owner’s planning for trip or travel).

Capacity Utilization

An owner, whether of a factory, a restaurant or a car; shall always strive for full or 100% capacity utilization of his asset.

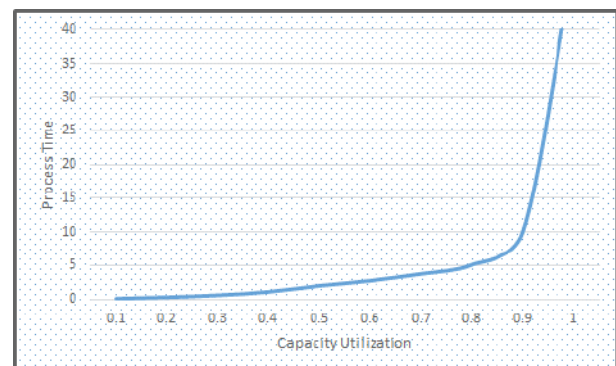
However, how practical or real it is to achieve 100% capacity utilization.

The Utilization Principle states that Cycle Time (or Processing Time) increases with Utilization and does so exponentially as Utilization approaches 100%.

In case of a factory, the process time or manufacturing time shall increase exponentially as we approach 100% capacity utilization.

In case of a restaurant, the average serving time of customers shall increase exponentially as the restaurant approaches full capacity.

And, in case of car, the ideal driving conditions of road and traffic shall not happen to allow for perfect mileage of the car.



We shall try to understand the same by way of a simple road-highway example.

Mumbai-Pune Expressway

All of us would have travelled on the Mumbai-Pune Expressway, sometime or other.

Now, how shall we define the capacity of an expressway; or for that matter any of the highway/road segment!

The above query needs to be answered from the point of view of the owner of the highway, who in present case shall be MSRDC (Maharashtra State Road Development Corp) or the toll-collection-agency.

The capacity of any road segment shall be defined by the total length of the road. In case of expressway, since it is multi lane; the capacity shall include both length and no of lanes. Or in other words, the capacity shall be defined as the total area of the expressway (road length x road width). This may be considered as the theoretical capacity of the expressway.

Now, when the expressway can be considered fully or 100% utilized. It shall happen, when each and every inch of the expressway shall be occupied by cars or buses or trucks.

All of us shall immediately react that this is impossible.

This scenario is possible in a theoretical sense. This shall happen when all the vehicles on the expressway are travelling in bumper-to-bumper position. Now, consider below factors for this to happen.

- 1) all the vehicles must be travelling at exactly same speed throughout the entire journey,
- 2) different types of vehicles, like cars, SUVs, buses, pick-up vans, trucks should travel exactly at same speed
- 3) there shall be no break application,
- 4) no driver fatigue or driver feeling un-well ,
- 5) no lanecutting/changing,
- 6) no leisure stoppage,
- 7) no vehicle break-down,
- 8) no passenger falling sick or needing to get down the vehicle,
- 9) no rock falling (during rains)
- 10) no monkey coming on road
- 11) no high or gutsy wind
- 12) no heavy rains
- 13) and so on ...

All of us shall immediately say that this is just impossible. And, so is the 100% capacity utilization.

All the above mentioned factors shall keep on reducing the capacity utilization ratio.

Now, just imagine when there is bumper-to-bumper traffic on the highway, what happens to the Process Time or the Travelling Time in present case of highway travel. The Travelling Time rises exponentially and may become unpredictable in case of severe traffic jam situation which stretches for long portion of the highway length.

So, what is the practical solution to the capacity utilization scenario. That the highway remains occupied, but without hindering the free-movement of various types of vehicles, all traveling at different speeds.

This could lead us to a situation, where the highway is occupied to certain extent, but definitely not 100% and not even 95%.

Repeating : the Utilization Principle states that Cycle Time (or Travelling Time) increases with Utilization (or Highway Occupancy) and does so exponentially as Utilization approaches 100%.

End-Note

This leads to my opening remark that 85% capacity utilization is better than 95% or 100% capacity utilization.

We have to strike a balance between Capacity

Utilization and Process Time. On a long term basis and considering data from different business sectors, it has been arrived that 85% capacity utilization is the ideal one.

However, the ideal capacity utilization ratio shall vary from sector to sector.

● ● ●

CONGRATULATIONS



Hearty Congratulations to SHRI. VOLETI VENKAT RAO, Student of GDMM and PGDMM and Life Member of IIMM on becoming REGISTRAR, Indian Institute of Technology Goa [IIT Goa]

Shri. V. Venkat Rao secured gold medal in GDMM Program of IIMM Hyderabad Branch. After GDMM, he was selected as Deputy Registrar at Indian Institute of Technology Hyderabad [IITH] and worked in various capacities viz.-Procurement, Administration, Academics, Recruitment, as CPIO and DDO etc. Recognizing his result oriented services, he got elevated as Joint Registrar at IIT Hyderabad.

His contributions to IIMM Hyderabad are multifarious in nature and particularly noteworthy are his contribution for NATCOM 2016 at Hyderabad and Executive/Management Development Seminars, Training Programs for spread of SCM domain knowledge.

His joining as Registrar at Indian Institute of Technology, Goa is a proud and blissful moment for IIMM.

IIMM wishes him the very best in his future assignment and wishes that he takes the reputation of SCM profession to further higher levels.

PHARMACEUTICAL SUPPLY CHAIN VULNERABILITIES: ROLE OF INFORMATION TECHNOLOGY

PROF. KALYANA C CHEJARLA,
INSTITUTE OF MANAGEMENT TECHNOLOGY, HYDERABAD
kalyan@imthyderabad.edu.in

Introduction : A supply chain is a set of processes, people, infrastructure, operating policies and agreements among different entities, whose objective is to transform the raw materials into finished goods and deliver to end customers, profitably. Modern supply chains are typically global and dynamic network arrangement of business entities that process the demand information upstream and coordinate product delivery downstream. Increased specialization and the drive towards efficiencies have resulted in burgeoning number of independent players across all supply chains necessitating the increasing need for integration across both strategic and operating levels. Additionally, pharmaceutical supply chains are vulnerable to a set of specific external forces acting on them. Goal of supply chain integration is to ensure smooth flow of product and information on one hand and plug the vulnerabilities on the other hand. Information Technology is the oil with which this integration machinery works. This paper examines the pharmaceutical supply chain vulnerabilities and role of Information Technology in enabling a better integration in light of these vulnerabilities.

Pharmaceutical Supply Chains

Pharmaceutical supply chains consist of the following entities:

1. Product Development Organizations

These are either specialized independent research organizations or in-house R&D departments of large pharmaceutical companies, whose focus is to develop new drugs for different therapeutic applications. New drug development process is long, arduous, costly, highly regulated and is ridden with uncertainties. A new drug development begins with evaluation of thousands of potential molecules to zero-in on one. It is not uncommon for this process to take 8 to 10 years before a successful launch and burn a couple of billions of dollars in the course.

2. Active Pharmaceutical Ingredient (API) Manufacturers

API (also known as bulk drug) is the main raw material used for making final drugs (also called formulations). API is essentially molecule that is produced using a series of chemical and physical processes. API manufacturing is a capital intensive, batch processing and quality sensitive task. Good Manufacturing Practices (GMP) and regulations govern the quality standards to be followed in API manufacturing. A typical batch processing cycle-time can run into days and a WIP of 30 to 60 days is common. Most of API manufacturers are situated in India and China. Often,

API manufacturers also outsource part of the production processes to Intermediates and may also have downstream formulation plants.

3. Secondary / Finished Dosage / Formulation Manufacturers

Formulation manufacturers (also known as secondary or finished dosage manufacturers) are involved in producing the ready-to-consume form drugs in tablets, capsules, injection vials etc. from APIs and other pharmaceutically inert binding material. These are the global majors of the pharmaceutical industry. Formulation plants are typically smaller in size, closer to markets and produce smaller batch sizes in comparison to API manufacturers. Formulations consist of drugs within (branded) and outside (generic) patent expiry date. While Formulations manufacturers typically focus on branded drugs, API manufacturers contend to move up the value chain by developing the generic formulations for drugs approaching patent expiry. Formulation manufacturing may be outsourced or handled in-house. Similar quality norms prevail in Formulations manufacturing processes as in API manufacturing.

4. Transportation, Warehousing and Distribution

The distribution of Finished Dosages to the patients happens through a multitude of channels such as company's own warehouses, wholesalers, 3rd party distributors, large pharmacy retailers, Group Purchase Organizations, direct-to-customers (typically large healthcare providers or NGO organizations), government operated public healthcare organizations etc., to name a few. Global transportation of bulk drugs is typically through a combination of ocean and over the road networks. Formulations are transported using air and over the road carriers. Transportation and warehousing of different drugs requires controlled temperature (ambient: 20~25°C, refrigerated: 2~8°C, frozen: sub-zero) conditions and specialized end-to-end cold chain infrastructure. Dispensation of drugs to patients happens through the end-points of the above mentioned distribution nodes either on prescription or over the counter depending on the type of drug.

Pharmaceutical Supply Chain Vulnerabilities

In comparison to the traditional consumer durables or FMCG supply chains, pharmaceutical supply chains are quite complex. Following vulnerabilities contribute to this complexity:

1. Temperature excursions : Any temperature excursions of the drug in the lengthy supply chain may render the entire batch useless at best and out-right dangerous at worst. There are pockets of supply chains

such as transportation, transshipment and loading & unloading which are highly vulnerable for excursions. Management of interfaces between different supply chain partners with a focus on such excursions is crucial for the overall supply chain success.

2. Rigid Production Processes : Usage of conventional batch processing is no longer suitable for the current dynamic environment. Make-to-order and continuous production are the order of the day as (a) there is a proliferation of specific drugs for specific conditions and (b) nobody in the supply chain wants to keep excess inventory of potentially non-moving drugs. Advanced Manufacturing Technologies that support continuous production are now already available. It is a moot question as to how many of the pharmaceutical supply chains are ready to radically overhaul their production processes.

3. Multitude of stakeholders : Pharmaceutical supply chains are constantly subject to nudges and forces from a variety of stakeholders such as public-at-large, regulatory bodies, insurance companies, Group Purchase Organizations, NGOs, medical device manufacturers, healthcare providers, camps promoting alternate medicines / treatment methods etc., to name a few. Given the sensitivity of outcomes in terms of the physical well-being of patients, it is imperative that the pharmaceutical supply chains cannot afford to ignore the voice of any of these stakeholders.

4. Expansion of the coverage : Measures by national governments to increase the insurance coverage for poorer sections, increased life expectancy, decreased infant mortality, emergence of life-style related diseases in affluent countries, out-break of epidemics in developing countries etc., are putting immense pressure on pharmaceutical supply chains to come up with custom supply chain designs that are suitable for individual market segments.

5. Increasing accountability : The complete traceability of a drug's batch is a key requirement for pharmaceutical supply chains, in order to assign accountability to the correct entity. Even the unknown or unforeseeable side-effects missed during drug development and approval can result in huge implications for a pharmaceutical supply chain.

6. Sustainability : Reverse logistics to collect and safely dispose the expired drugs, adhering to mandatory affluent treatment, hazardous material disposal by the API and formulations manufacturers are the key sustainability requirements of pharmaceutical supply chains.

7. Radical Innovations : New developments in Biologics, Nucleic acids, cell therapy, regenerative medicine, implantables and bioelectronics have the potential to totally alter the way new drugs are developed and administered to patients. This may mean a complete overhaul of current pharmaceutical supply chains to remain relevant in the new reality.

8. Counterfeits : The menace of Counterfeit drugs is rampant across the globe. It is important for the pharmaceutical supply chains to sensitize pharma retailers and customers on the perils of these counterfeit drugs and also put sufficient security

measures in their supply chains to detect and prevent infiltration of the counterfeits.

Information Technology & Supply Chain Integration

Integration of supply chains involves shared strategic objectives, transparency and timeliness of information sharing, creation of joint planning, feedback & performance review mechanisms, institutionalizing flexibility of operations and undertaking continuous improvements projects together by different supply chain partners. Integration can be achieved in different degrees depending on the length and trust in the relationship. Lowest level of integration is at the operational planning and execution and the highest level is when the supply chain partners share the strategic objectives and align their commercial relationship to suit these objectives. Information Technology is a foundation on which supply chain integration can be realized among the supply chain partners. The following section briefly describes about a few existing and emergent technologies and how pharmaceutical supply chains can leverage these technologies to achieve integration.

Supply Chain Management Electronic Data Interchange (EDI)

Real-time information on plans, reports, transactions and alerts can be exchanged between the enterprise systems of partners via supply chain electronic data interchange (EDI). Information documents such as purchase orders, shipment notices, invoices etc., are pre-coded and standardized in EDI framework. Implementation of EDI is known to reduce the business cycle times and improve data quality.

To¹ illustrate the point, a specialty pharmaceutical company offering consumer healthcare & prescription products has been able to achieve same day dispatches to its trading partners such as McKesson, Cardinal Health, Walmart, Target and CVS. ProcessOne has helped this company automate the order fulfillment process data transmission through P1 EDI implementation. Purchase orders (at customers) trigger Sales Order generation (at the company HQ), which in turn raise Advance Shipment Notice (at the Company Warehouse) followed by Invoice generation (at the company HQ). These documents are electronically transmitted to the relevant trading partner with no manual intervention. This was a huge improvement compared to 2 or 3 day delay in dispatches, manual errors and high cost of fulfillment process.

Cloud Computing : Cloud based SCM solutions promise rapid scalability, immediate deployment and access from anywhere. Pharmaceutical supply chain partners, especially the ones without existing in-house enterprise systems could consider this solution to be digitally visible and integrate with the rest of the supply chain.

A few use cases for cloud in pharma industry identified by IDC² and Ponemon Institute are: locating and managing subject patients in a certain area for clinical trials, access to product identifier database for pharma shipments by various heterogeneous stakeholders simultaneously and search virtual chemical libraries to identify potential molecules for future developments.

Industry 4.0 : Industry 4.0 collectively refers to a cyber-

physical setup in which all the connected systems communicate with each other and manage decentralized and localized planning and execution. Key building blocks of Industry 4.0 are Advanced Robotics, Additive Manufacturing, Augmented Reality, Simulation, Horizontal & Vertical Integration, Industrial Internet and Cybersecurity. Pharmaceutical supply chains can use Industry 4.0 in production and logistics planning and controlling. Automated batch level tracking and control within the plant and pallet level tracking and control during transit is possible by using suitable sensors. Simulations can be used to optimize the production across the supply chain without having to incur costly set-ups.

According to a report by Frost and Sullivan, Apotex Pharmachem³, a Canadian pharmaceutical manufacturer has implemented IIoT concepts such as autonomous vehicles, RFID tracking and smart sterilization that helped the company achieve real-time view of the plant operations, improve efficiency and productivity and thereby increase its capacity.

Block Chain : A block chain is defined as an open, distributed ledger that can record transactions between two parties efficiently and in a verifiable and permanent way. Thus the transactions recorded in block chains are immutable and the updates are traceable. By having the sensors record details such as chemical composition, temperature, package open status etc., into a block chain directly, everybody in the supply chain is aware of the prior transactions that have occurred on their shipments.

Merck⁴ has developed a PoC (Proof of Concept) Blockchain application in partnership with SAP to ensure authenticity of the returned drugs. This mobile application keeps track of the item number, a serial number, a batch number, and an expiration date every time the shipment changes hands in addition to geographically tracing the shipment, making it virtually impossible for the counterfeit drug to enter the supply chain.

Big Data & Analytics : Big Data refers to those IT applications that can collect, preprocess and generate learning / insights from this data. Typically sources of big data are social media platforms, company & other related websites and a hoard of sensors deployed across the supply chain. Analytics is of three kinds, namely descriptive, predictive and prescriptive. Pharmaceutical supply chains can find immense value in developing Big Data & Analytics capabilities in areas such as drug development (shortlisting molecules), impact of different local events on drug demand, quickly respond to reported drug side-effects etc., Merck⁵ had analyzed its production data of 255 batches over last 10 years that was spread over 16 databases pertaining to one vaccine, performed over 15 billion calculations using Big Data concepts with a help of an analytics firm, Hortonworks to identify variable levels (from among hundreds of variables) of batches with highest yields. Using the insights, the company had significantly improved the yields and reduced the cost of production of this vaccine and later by applying same principles, other vaccines as well.

Conclusion : In conclusion, we summarize the efficacy of various Information Technology options in achieving integration and in addressing vulnerabilities of pharmaceutical supply chains as follows, with a caveat that IT is just a tool and it is the managers that must make it work:

Vulnerability / IT Solutions	EDI	Cloud	Industry 4.0	Block Chain	Big Data & Analytics
Temperature excursions			Y	Y	
Rigid Production Processes			Y ⁶		
Multitude of stakeholders	Y	Y		Y	Y
Expansion of the coverage	Y	Y	Y		Y
Increasing accountability	Y	Y	Y	Y	
Sustainability			Y ⁷		Y
Radical Innovations				Y ⁸	Y
Counterfeits				Y ⁹	

The above analysis indicates that whilst for some vulnerabilities (viz., Multitude of stakeholders, Expansion of coverage etc.), a combination of IT solutions are relevant for best results whereas for the vulnerability, Radical Innovations the existing IT solutions are inadequate in their current state.

(Footnotes)

¹<http://www.processonesolutions.com/news/2017/6/15/lup16dk9ly735bse7z1irwvgtffvt1w>

²<https://www.healthcareitnews.com/news/top-pharma-use-cases-cloud>

³<https://www2.frost.com/frost-perspectives/towards-pharma-40digitization-pharma-manufacturing/>

⁴<https://hackernoon.com/top-5-use-cases-of-blockchain-in-pharma-and-healthcare-that-you-should-know-about-77ccdd76369b>

⁵<https://hortonworks.com/solutions/pharmaceuticals/>

⁶Advanced Manufacturing Methods are considered part of Industry 4.0 portfolio

⁷ Effluents emission can be simulated using Industry 4.0 and Analytics suite and appropriate managerial decisions be taken

⁸Once the company has built Radical Innovation capability, Block Chain, Big Data & Analytics can be useful in integration

⁹Counterfeits infiltrating into the legitimate pharmaceutical supply chains can be detected and blocked using block chains





DISCUSSION ON E-INVOICE SYSTEM

CA. NARENDRA GUPTA
canarendragupta@gmail.com

1. National Informatics Centre (NIC) has built the e-invoice system as per the latest e-invoice (IRN i.e. Invoice Reference No.) schema published on the GSTN portal.
2. **As per the notification of GST (Notification No. 61 dated: 30th July, 2020):** this system has been enabled for tax payers based on specified turnover (as per data available in GST system).
3. The notified tax payers have to generate the IRN for the supplies/sales.
4. The IRN has to be generated for the documents of Invoices, Debit Notes and Credit Notes for B2B and export transactions.
5. The tax payer has to upload the complete invoice details as per Form GST-INV-01 whether prepared manually or through internal ERP/accounting system, and
6. The IRP (Invoice Registration Portal) returns the IRN with the signed invoice and QR code back to the tax payer **after due validations of the data.**
7. The QR code has to be printed by the tax payer on the invoice being issued to the buyer.
8. It may be noted that the IRN can be generated by the supplier only and not by buyer or transporter.
9. There is a facility to cancel the IRN:
 - if active e-way bill is not there.
 - the e-way bill is not generated or the e-way bill generated and later cancelled.
 - then the user is allowed to cancel the IRN.
10. By going to the e-invoice portal and selecting 'e-invoice status of Tax Payer' under Search option:
 - on entry of the GSTIN
 - the system will indicate whether this GSTIN is enabled for the IRN generation.
11. If your Turnover is exceeding specified limits but your GSTIN is not enabled,
 - then you may register voluntarily by clicking on Registration->e-Invoice Enablement.
12. if your Turnover has not crossed specific limit but you have been enabled for e-invoicing,
 - then you may send mail to support.einv.api@gov.in.
13. The tax payer can also access the list of registered GSPs (GST Suvidha Providers) and ERPs:
 - who have enrolled to provide the e-invoice services to the tax payers.
14. This option available as 'GST Suvidha Providers (GSP)' and 'ERP' under search option.
15. One can upload the IRN generated and signed invoice file and
 - get it verified on the portal for the authenticity of the IRN.
16. For this option, select 'Verify Signed Invoice' under Search option.
 - There is a facility to login to the e-invoice system.
17. Single Sign on system has been used to login to the e-way bill and e-invoice systems.
 - if the tax payer has the username and password created on the e-way bill system,
 - then same can be used to login to this system (IRP).
18. If the tax payer has not registered in the e-way bill system - he can use the registration facility and register for the e-invoice system.
19. Then system enables him automatically for both the e-way bill and e-invoice systems.
20. Presently, e-Invoice System provides the two modes of IRN generation –
 - Offline and
 - API.
21. The following table provide the different methods involved in IRN generation based on the turnover of the tax payers.
 - The notified tax payers can use these modes for the generation of IRN.
22. **Generate the e-way bill along with the IRN:**
 - The tax payers can also generate the e-way bill along with the IRN in one go or
 - generate IRN and the e-way bill later based on the IRN.
23. **On generation of IRN:**
 - the system returns the signed invoice in the JSON format with the QR code.
24. Then invoice can be issued to buyer along with QR code.
25. **Download a Mobile App:**
 - There is an option in the website to download a Mobile App (for Android and iOS)
 - which may be used to verify: the authenticity of the QR code and the contents printed on the Invoice.
26. **This app may be used by:**

- any taxpayers or
- tax officers or
- any external agencies like banks and other financial institutions
- for verifying the invoice.

27. The tax payer can also know after logging into the portal:

- his/her sister concerns generating the IRNs and e-way bills using API

28. This helps him to tie up with his/her sister concerns for integration of API mode

29. Testing of API integration on the sand-box system:

- Before integration with the API on production system
- the tax payer needs to do the testing of API integration on the sand-box system
- (<https://einv-apisandbox.nic.in>).

30. The sandbox system:

In the sandbox system -

- the notified tax payer can register and
- understand the process of IRN integration and
- test the integration with his/her own system.

31. The following procedures explain how to on-board on production system for API integration after completion of testing on sandbox.

32. Various methods for IRN generation:

The enabled taxpayers can use any of the following methods for IRN generation:

- Offline tool - Upload the invoices in standard format and generate the IRN in one go
- API - Through GSPs (GST SuvidhaProviders) integration –
 - System-to-system integration using APIs through registered GSPs
- API - Through ERPs integration –
 - System-to-system integration using APIs through registered ERPs
- API - Through e-Commerce integration –
 - System-to-system integration using APIs through e-Commerce operators
- API – Direct integration –
 - System-to-System integration using API directly from Tax Payers system
- API - Through enabled sister concerned GSTIN –
 - System-to-System integration using API through the sister company of the Tax payers:
 - having same PAN.
 - If it has been enabled for API.
- E-Way Bill API enabled Tax Payers –
 - System-to-System integration using API for already E-Way Bill enabled Tax Payers

www.canarendragupta.in



Indian Institute of Materials Management

MISSION

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

OBJECTIVE

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

CODE OF ETHICS

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

EXPORTS: INDIA'S WINDOW OF OPPORTUNITY

AMITABH KANT, CEO, NITI AAYOG

The gains to an economy from engaging in international trade are well established. Since World War II, we have seen many countries grow on the back of rising investments and exports. Japan, South Korea, China, and to some extent, Thailand and Malaysia, are all examples of economies where exports played a major role in driving economic transformation. It has been clear for some time now that strong exports are crucial in driving development.

These countries recognised early on that all materials needed for production may not necessarily be the cheapest in domestic markets and so put in place liberal trade regimes for imported inputs. A large proportion of our imports, 32%, consist of intermediate goods. Almost 70% of all anti-dumping duties are levied on intermediate goods. This has a cascading effect on the pricing of downstream industries. India should not increase tariffs or raise non-tariff barriers on intermediate goods. This is because the goods that come into India flow into goods manufactured for exports. Any increase in the cost of such products indirectly increases production costs and hampers our exports. By raising the cost of these critical inputs, we end up further eroding our competitiveness, already burdened by a high cost of logistics, credit, and power. The experience of these Asian countries illustrates that imports and exports grow hand in hand. Take the Automobile industry for example. We import USD 6.1 billion worth of auto components, but using these imports, our automobile industry exports \$18 billion worth of products.

This holds true at a broader level as well. For example, between 2001 and 2010, our trade to GDP ratio nearly doubled from 26% to 49%. Both imports and exports grew during this period. In nominal terms, both imports and exports grew at rates close to 20% in this decade. An analysis of China's experience also shows imports and exports growing at similar rates. Digging deeper, academics have found that almost half of China's imports consisted of intermediate goods, which were then instrumental in raising their exports. Important to note is that a liberal import regime was followed for such intermediate goods, with duty-free imports allowed.

A key learning from the Asian experience is that incentive structures were put in place to ensure higher relative profitability of exports compared to the rest of the sectors. The incentive structures ranged from subsidised bank credit, export targets linked to long-term credit, export subsidies, and incentives for R&D, amongst others. An important lesson is that while import substitution may have been in place, it was gradually phased out. Another important lesson is that these countries having developed their capabilities in labour-intensive industries and gradually moved up the manufacturing value chain. Public investment in infrastructure to reduce the cost of logistics is another key policy intervention. Given that export incentives were functional and broad-based, it is pertinent to note that several strategic sectors were identified for promotion. The lessons from the experiences of Asia indicate that export promotion, rather than import substitution, drives development.

Yet, India was unable to replicate this model of export- and investment-led growth. As per the WTO, India's share in global merchandise trade stood at < 2%, despite having the inherent strength and potential to do much better. Whilst we have done well in the services sector, manufacturing and exports growth

have not been broad-based as in the case of other Asian nations. The result is clear to see, manufacturing as a share of GDP and employment remained stagnant between 1990 and 2020. Whilst exports have increased, they are dwarfed in scale by China. Even in traditional sectors, like food processing where we have one of the largest raw materials bases in the world, we command a 2% share in global exports. Several factors explain this. We lag in credit availability to the private sector. Domestic credit to the private sector, as a percentage of GDP, stood at 50% in India, compared to 165% in China and 123% in other upper-middle income countries. Our private debt to GDP ratio is extremely low and there is immense possibility of enhancing it for manufacturing and exports. Cross-subsidisation of power, higher cost of logistics and labour laws have been the other constraints. Similarly, the composition of India's exports needs to undergo a radical change. Our export basket is predominantly traditional and does not comprise cutting-edge products. As much as 70% of India's exports target 30% of world trade comprising items with a declining global share.

The need is to promote our domestic manufacturing industry to drive exports and growth. Several important policy steps have been taken in this regard over the past few years. First, the decision to lower the corporate tax rate to 22% for all firms and 15% for new manufacturing firms, will encourage the domestic manufacturing sector. The introduction of the Production-Linked Incentive (PLI) schemes in several key sectors, for the first time, incentivise production, rather than inputs. These schemes will help domestic manufacturing achieve size and scale. As many as 29 Central labour laws were rationalised into four codes. The definitions of MSMEs have been raised upwards, allowing them to grow in size, whilst maintaining the benefits of MSMEs. All these steps should help in domestic industry achieve size and scale.

Globally, demand is rising as the world is awash with liquidity. The various stimulus packages in the US total close to 27% of its GDP, with the latest size of the stimulus package being \$1.9 trillion. World Bank's forecast is that the global economy will grow at 5.6% this year, making it the fastest post-recession recovery in 80 years. In its 2021 Global Outlook, Morgan Stanley predicted the global economy to grow by 6.4%, with the US growing at 5.9%, the Euro Area at 5.0% and the UK at 5.3%. Growth rates are likely to remain elevated for 2022 as well. As a result of these stimulus programmes, India's exports have been growing at a steady pace. Monthly exports between January and May 2021 have totalled \$152 billion, significantly higher than any similar period. Now is the time to give it a big push. The possibility of a sharp recovery for the economy can only be realised through a strong focus on exports. The opportunity of India integrating itself into global value chains (GVCs) cannot be allowed to pass. Strong and coordinated policy action, across all levels of governments, is needed to realise this opportunity. Fiscal space is constrained, so is private consumption and investment. Exports must be the cylinder on which growth is fired for the foreseeable future.

Views expressed are personal.

* An edited version of this article was published in Business Standard

Source: NITI Aayog

● ● ●

DEPLOYING A CUSTOMER-FOCUSED SUPPLY CHAIN STRATEGY WITH 4RS (RESPONSIVENESS, RESILIENCY, RELIABILITY AND REALIGNMENT) MODEL

PANKAJ M. MADHANI, ASSOCIATE DEAN & PROFESSOR
ICFAI BUSINESS SCHOOL

Introduction : In today's world of complex and extremely competitive business milieu, firms are struggling to survive as product lifecycles (PLCs) have become shorter, clock-speed has become faster, and the consequences of disenchanting a customer have become more severe. In today's competitive business environments, firms are under intense pressure to systematically produce quality control and quality standards and generate positive bottom line results. That's why many firms are looking for ways to be more productive, creative and competitive as these factors affect their performance.

To improve business performance in rapidly changing environments, supply chain performance can be a crucial prerequisite. The supply chain is one of the key lifelines of an organization hence, it has to transit from being simply a supporting activity to becoming an integral part of business strategy. Differentiation through customer service is the most effective way to improve business performance, and customer-focused supply chain strategy can help to achieve high-level customer service.

Traditional Supply Chains versus Customer-focused Supply Chains : The traditional supply chain in which the end point of networks are represented by final users, is no more relevant today, as such cost-focused supply chains driven by efficiency criteria are more susceptible to unforeseen swings in demand. In the traditional supply chain function, the major focus is on demand forecasting function while synchronizing distribution function.

However, only a customer order drives real demand in the process and fills the supply chain. Hence, each supply chain member overestimates the customer demand to avoid stock-out situations. Usually, each supply chain entity "over-plan" stocks and keep safety margin to assure better customer service without supply disruption. This phenomenon is known as the "bullwhip effect" where a small variation in demand downstream generates increasingly larger demands as it progresses up-stream.

Traditional, supply chain aims to reduce operating costs for firms by enhancing supply chain efficiency across its various processes. However, focusing only on cost-driven efficiency based strategy provides temporary competitiveness; it will not offer sustainable competitive advantages as products and services are

not differentiated from competitors (Madhani, 2020a).

As an extension of the cost-focused (i.e. efficiency driven) supply chain, customer-focused supply chain provides better solution to cater changing customer needs. Table I, below shows major differences between traditional supply chains and customer-focused supply chains according to competitive priorities. Supply chain capabilities of responsiveness, resilience, reliability and realignment can be categorized as dynamic capabilities.

Dynamic capability is the organization's capacity to create, extend, or modify competences (internal and external) to respond to volatile and uncertain business environment. Such dynamic capabilities refer to the ability of an organization to meaningfully manage (i.e. integrate, build and reconfigure) its resource and hence can be differentiated from operational capabilities, which relates to existing processes of the organization. Thus dynamic capabilities of responsiveness, resilience, reliability and realignment provide competitive advantage for supply chain. It is mainly because these capabilities are built and revised according to market potential, structural changes in market as well as business conditions (Madhani, 2017).

Table I: Traditional Supply Chains versus Customer-focused Supply Chains

Sr. No.	Competitive Priorities	Traditional Supply Chains	Customer-focused Supply Chains
1	<i>Responsive</i>	Modest ability to respond to changes	Quick ability to respond to changes by taking proactive actions
2	<i>Resilient</i>	Usually restricted to an individual supply chain / or a bunch of supply chains and hence provides limited flexibility	Develop a specified cluster of several supply chains for enhancing flexibility
3	<i>Reliable</i>	Focus on cost-efficiency	Focus on reliable and cost efficient supply chains
4	<i>Realigned</i>	Often supply chain participants are asked to make selection between self-interest and interest of supply chain partners	Usually interests of supply chain partners converge to develop better synergy

(Source: Tabulated by author)

Strategic Supply Chain Management : The supply chain management (SCM) operates at three levels: strategic, tactical and operational and the highest level of SCM decisions is the strategic - also referred as strategic supply chain management (SSCM) which is relevant to

the entire organization. The main theme of SSCM is not limited to the use of a supply chain as a process to deliver goods and materials to right place, as its scope is extended to elevate strategic position of an organization by strengthening its overall business performance. SSCM is about strategic thinking on supply chain management to enhance the firm's performance (Madhani, 2020b).

SSCM can enable organizations to create value in multiple ways and shows how the role of supply chain is being redefined, from an operational tool to a powerful competitive strategic weapon. SSCM improves business performance in current era of complex and volatile environment characterized by intense rivalry. Organizations can experience improved performance through SSCM by aligning various processes from customer and its upstream, and sharing relevant data for enhancing customer value proposition.

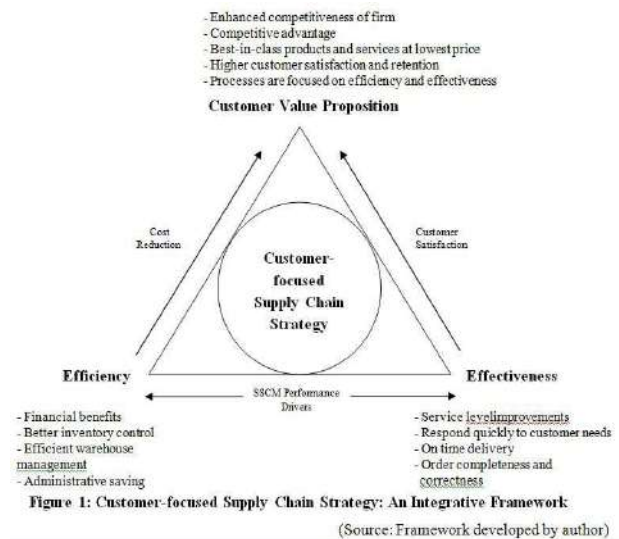
SSCM integrates suppliers, manufacturing, warehouses, and stores so that merchandise is produced and distributed at the right quantities, to the right location, at the right time, in order to minimize system-wide costs while satisfying service level requirements. SSCM facilitates an integration of diverse resources and various processes to distribute goods and materials to final users by delivering value at every stage (Madhani, 2018a).

SSCM meets the issues of providing better value to customers by understanding customer interface from the perspectives of competitive priorities. SSCM is a customer-focused approach which extends the capabilities of supply chain networks by diverting the attention to the fulfillment of diverse needs of customers.

Customer-focused Supply Chain Strategy: An Integrative Framework : Customer-focused supply chain strategy has twin objectives: the objective of the customer satisfaction (to mobilize overall supply chain partners' effort to improve levels of service and enhance responsiveness) and objective of cost reduction (to link supply chain processes effectively to reduce variability and enhance revenue and generate a profit).

As shown in Figure 1, an integrative framework combines two kinds of performance measures such as efficiency (focus on financial performance measures and underlying financial benefits) and effectiveness (focus on operational performance measures and underlying operational improvements) in evaluation. In general, increase in sales that result from higher customer satisfaction and cost reduction that result from the decreases in material, inventory and transportation expenses are examples of financial performance measures.

Operational performance measures include improvement in cycle time, lead time, utilization rate and forecast accuracy, etc.



An efficient and effective supply chain delivers quality products on time and in the right quantities, reduces order cycle time and provides mutual benefits for supply chain partners.

Customer-focused supply chain strategy is increasingly being recognized by organizations as a strategic choice for enhancing performance of organizations by decreasing inventories across various partners of supply chain and simultaneously delivers what the customer demands. Deployment of customer-focused supply chain strategy by a firm enhances the overall performance and hence subsequent competitiveness of the entire chain i.e. including firm as well as partners of supply chain. Customer-focused supply chain strategy strives to achieve the objectives of achieving higher efficiency and effectiveness with better integration. Hence such supply chains are capable of building competitive advantage by balancing higher efficiency requirements along with better demand management while managing supply chain risks (Madhani, 2019).

Table II shows key benefits of customer-focused supply chain strategy.

Table II: Customer-focused Supply Chain Strategy: Key Benefits

Sr. No.	Cost Reductions (Cost Efficiency)	Customer Satisfaction (Customer Effectiveness)
1	Reduced total inventory level (finished goods, raw material)	On time delivery
2	Low carrying cost of inventory	Order completeness
3	Reduced inventory obsolescence	Order correctness
4	Reduced third-party storage	Damage-free and defect-free delivery
5	Administrative saving: (order management, purchasing, production labor, and process cycle time, etc.)	High customer service level: (order fill rate, order cycle time, etc.)
6	Reduced cost of poor quality	Low stock out level
7	Higher efficiency of SCM	Higher effectiveness of SCM

(Source: Table Developed by Author)

Customer-focused Supply Chain Strategy: Developing 4Rs Model : A customer-focused supply chain strategy can improve the product planning process as well as distribution strategy and overall supply chain decision making related to it. It also boosts the organization's ability to introduce new products and enhancements of existing products in an effective and efficient manner. As customer data and information is shared in real-time with the supply chain partners, quality improvements and product innovation process accelerates while trimming down time to market. Such strategic approach for enhancing customers' overall satisfaction with firms' products or services, improves the profitability and efficiency of the entire enterprise in the long run, which includes all the supply chain partners (Madhani, 2018b).

The diverse goals of a customer-focused supply chain strategy are (1) to enhance responsiveness to demand fulfillment process by delivering the materials in correct sequence and shape i.e. at desired place and time by gathering and analyzing sales data. Supply chain responsiveness enables supply chain to initiate quick response on short-term, temporary or interim changes in supply/demand; (2) to enhance resiliency of supply chain to cater volatile demand changes by modifying supply chain design to accommodate market dynamics. Resilient supply chain quickly senses market changes to meet customers demand, withstands systemic discontinuities and adapts to a new risk environment; (3) to increase reliability by controlling probable causes of supply chain risks, design constraints and interruptions as a reliable supply chain performs its function as intended overcoming supply chain disruptions; and finally (4) to enhance realignment among supply chain partners by establishing incentives for them to improve performance of the entire chain as a realigned supply chain operates in an uninterrupted and seamless fashion. Figure 2, shows, a conceptual framework of a customer-focused supply chain strategy with all these competitive priorities of responsiveness, reliability, resiliency and realignment (Madhani, 2020a).

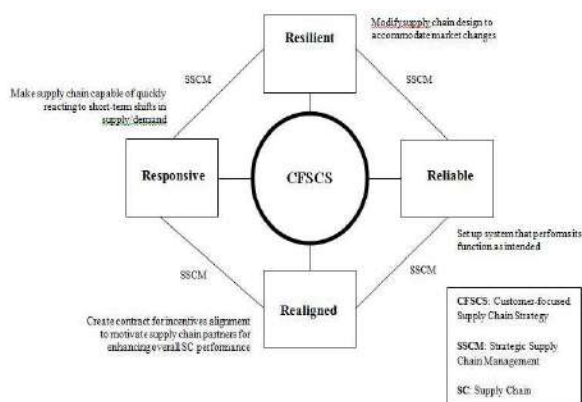


Figure 2: Customer-focused Supply Chain Strategy: 4Rs (Responsive, Resilient, Reliable and Realigned) Model

(Source: Model Developed by Author)

Responsiveness : Responsiveness describes the ability to react quickly to sudden variations in demand or supply. With responsiveness, firms handle external disruptions smoothly by responding to short-term changes in demand or supply swiftly. Current scenarios in business world represent uncertain and highly turbulent environment caused by increased complexity, interdependency of organizations and volatile customer demand. To cope up with these challenging demands, firms should take more proactive steps which will delight customers and subsequently enhance their market competitiveness. In this context, a responsive supply chain is characterized by higher order of customer-focus, information-intensity, and flexibility to quickly meet changes in customer demand. Responding quickly is essential in current era of intensive competitiveness. Building a responsive supply chain is crucial in current business environment to create competitive advantage for the firms.

Resiliency ; Resiliency describes the ability to adapt overtime as market structures and strategies evolve. It allows firms to alter design of supply chain according to changes in products, markets, strategies and technologies. The supply chain resilience is the ability of a system to return to its original state or move to a new, more desirable state after being disturbed (Christopher & Peck, 2004). Unless firms make their supply chain adaptable, it's very challenging for them to remain competitive in market place. Resiliency means how quickly the supply chain returns to the state before disruption levels. Organizations take actions across three priorities of respond, reset and renew to build supply chain resiliency. There is a structural shift in key business landscapes and hence supply chain needs to adapt it with higher resiliency. Such shift is caused by diverse market variables such as economic, social and political factors; shift in demographic trends and technology progress. Organizations can develop a resilient supply chain in three main ways: creating and increasing redundancies throughout the supply chain; building flexibility and changing the corporate culture (Sheffi, 2005). The supply chain resiliency requires three core enablers: people, process and technology. COVID-19 has demonstrated impact of supply chain vulnerabilities and hence, the importance of supply chain resiliency has never been more important.

Reliability : In supply chain performance management, reliability indicates 'correct' supply chain delivery performance in terms of product, place, time, packaging, quantity, and documentation, to the actual customer. Reliability represents the odds that any individual component or whole system carries out its assigned task as planned and hence it refers to the degree to which a supply chain yields consistent performance. Following are major operational issues that cause disruption in a typical supply chain:

1. Late delivery of materials from suppliers’.
2. Large waiting time for semi-finished products in process.
3. Insufficient stock levels in warehouse.
4. Failure in prediction of demands
5. Improper delivery to the customer.
6. Delayed transmission of orders to logistic companies.

Random supplies and disruptions have been important sources of uncertainty hampering the reliability of supply chains. The collapse of any entity or linkage in supply chain network would amplify overall supply chain costs and weaken the process of delivering value to customers. Instead of relying on traditional supply chain usually known as efficiency driven cost-focused supply chain, business firms today require reliable supply chain in addition to cost-focused supply chain. The main reason for this shift is the negative impact of supply uncertainty on supply chain networks.

Realignment : Realignment of supply chain refers to aligning the interests of supply chain partners continually by confirming that the goals of a supply chain partners are in harmony. Whilst making such realignment of the interests among various supply chain partners in the network, firms deliver optimal supply chain performance when they maintain their priorities and fulfill own goals. Realignment also helps supply chain partners resolve the issues between opportunity losses due to inadequate capacity for meeting unpredictably high demands and real losses due to surplus capacity for meeting forecasted demand that is not realized. It links demand management processes and supply chain operations for better prediction of demand so as to optimize inventory level. If this alignment between demand and supply fails, it results in either shortage of inventory (leads to lost sales) or surplus inventory (leads to profit loss caused by buffer stock). Real time analysis of product demand can accelerate development efforts for refinement of products and boosts as well as creates demand for new products. Realignment creates incentives for better performance. Incentive alignment is an important tool to facilitate collaboration between the common supply chain and each individual firm. Supply chain partners should provide more financial and non-financial incentives to promote supply chain realignment. The benefits of collaborative practices will only be fully realized when all parties in the supply chain cooperate closely with one another.

Conclusion : Customer-focuses supply chain strategy has a direct impact on top and bottom-line performance of a firm, as it enhances capabilities of the firm to adapt to the swiftly changing business environment, with even more focus on the customer. Firms that effectively develop customer-focuses supply chain strategy are differentiated from other firms in number of ways: increased revenue, elevated profit, and

higher customer retention rate due to a better consumer experience. The dynamic capabilities of responsiveness; resiliency; reliability and realignment are important drivers of customer-focuses supply chain strategy. Customer-focuses supply chain strategy helps organizations to anticipate demand of consumers precisely; cater such demand reliably and swiftly and enhance supply chain productivity. Hence, it ultimately leads to decrease in supply chain costs, faster market response and higher efficiency and effectiveness of supply chain. In addition to aligning organizational resources with customer value creation, it can directly improve forecasting, product planning and optimization. Greater insight into demand and delivery schedule will improve operational efficiencies and help organizations in creating the business value they seek. This research develops 4Rs (responsiveness; resiliency; reliability and realignment) model for successful deployment of a customer-focuses supply chain strategy.

REFERENCES

1. Christopher, M. & Peck, H. (2004). "Building the resilient supply chain". *The International Journal of Logistics Management*, 15(2), pp.1-13.
2. Madhani, P. M. (2020a). "Customer-focused supply chain strategy: developing 4Rs framework for enhancing competitive advantages". *International Journal of Services and Operations Management*, 36(4), pp. 505-530.
3. Madhani, P. M. (2020b). "Strategic supply chain management: a strategic approach for enhancing business performance". *Materials Management Review*, 16(9), pp. 27-29.
4. Madhani, P. M. (2019). "Building a customer-centric supply chain strategy: enhancing competitive advantages". *The IUP Journal of Business Strategy*, 16(2), pp. 28-42.
5. Madhani, P. M. (2018a). "Strategic supply chain management: developing conceptual framework and research propositions, *Facets of Business Excellence in IT*, Renato Pereira, Rajeev Sharma, Antonio Robalo, Sandeep Puri, Jayanthi Ranjan (eds.), pp. 389-399, Bloomsbury Prime.
6. Madhani, P. M. (2018b). "Building customer-focused supply chain strategy with 4R model". *The Journal of Contemporary Management Research*, 12(1), pp.14-32.
7. Madhani, P.M. (2017). "Customer-focused supply chain strategy: developing business value-added framework". *The IUP Journal of Supply Chain Management*, 14(4), pp. 7-22.
8. Sheffi, Y. (2005). "Building a resilient supply chain". *Harvard Business Review*, 1(8), pp.1-4.

● ● ●

GOVERNMENT TAKES VARIOUS INITIATIVES TO BOOST INDUSTRIAL MANUFACTURING; TAKES STEPS TO UPLIFT THE STARTUPS AND PROMOTE 'VOCAL FOR LOCAL' CAMPAIGN AND E-COMMERCE

Government of India has taken several steps to improve the quality standards of products manufactured under the AatmaNirbhar Bharat Campaign. These inter alia include:

1. **Quality Control Orders (QCOs):** Since the announcement of AatmaNirbhar Bharat campaign, Central Government through its various Ministries/ Departments has notified 156 products under compulsory BIS certification through issuance of QCOs. As per these QCOs, the products specified therein shall conform to the requirements of relevant Indian Standards and bear a Standard Mark under a license from Bureau of Indian Standards.
2. **Production-Linked Incentive (PLI) Scheme:** To provide a major boost to manufacturing, Government has launched Production Linked Incentive (PLI) Scheme for 13 sectors with an outlay of Rs 1.97 lakh crore over the next five years.
3. **Udyog Manthan:** DPIIT in collaboration with D/o Commerce, QCI, NPC, Bureau of Indian Standards, Industry Chambers and line ministries conducted Udyog Manthan, a two- month long series of webinars comprising 46 sessions, focused on Quality and Productivity in all major sectors of manufacturing and services.

The steps taken by Government to uplift the startups and to promote 'vocal for local' campaign are as under:

- i) Government of India has extended relaxations on prior experience, prior turnover and earnest money deposit as per the provisions of GFR to ease public procurement from startups.
- ii) Government of India has taken up **Fund**

of Funds for Startups (FFS) Scheme and Startup India Seed Fund Scheme (SISFS) to uplift the startups in the country . The objectives of **Fund of Funds** scheme include accelerating innovation driven entrepreneurship and business creation, mobilizing larger equity- like resources for startups. The **SISFS** aims to provide financial assistance to startups for proof of concept, prototype development, product trials, market entry and commercialization.

The steps taken by Government to help startups and other local manufacturers in using the e- Commerce and online platforms are as under:

- i. **Government e-Marketplace (GeM)** is set up for providing an online platform for procurement of common use goods and services by government organizations. Any entity including DPIIT recognized startups can register on GeM as sellers and sell their products and services directly to government entities.
- ii. **Startup Runway** is developed by GeM in collaboration with DPIIT, which is a unique initiative for promoting entrepreneurship through innovation. It has been developed as a dedicated platform for startups to list their products and services for government procurement with relaxed procurement norms and regulations.

This information was given by the Minister of State in the Ministry of Commerce and Industry, Shri Som Parkash, in a written reply in the Rajya Sabha today.

Source : PIB

● ● ●



RE-EXPORT OF WAREHOUSED GOODS TO NEPAL & BHUTAN

SN PANIGRAHI, PMP, PROJECTS, LEAN SIX SIGMA,
GST & FOREIGN TRADE CONSULTANT & TRAINER
snpanigrahi1963@gmail.com

Re export is sending back goods imported for specific purposes like jobbing, execution of a contract, servicing/repairing of machineries, display in fair/exhibition etc. It also happens when indigenously manufactured goods were returned back after export and re imported for repairing/reprocessing etc. due to reasons such as defective, not meeting buyer's requirement etc.

Re-Export of Goods may also happen when goods are Imported into India from a Country and then after Exported to another Country. For example, Machines are Imported from Germany into India and Exported to Nepal. Goods can be kept in customs bonded warehouse and then re-exported without payment of customs duty. Export of Warehoused Goods is subject to some Conditions as per **Section 69 of Custom Act, 1962**.



Let's discuss here **Re-Export of Warehoused Goods to Nepal & Bhutan**.

Section 69 of Custom Act, 1962 read with Notification No. 46 Cus dated 01.02.1963 allows goods imported and warehoused but not cleared for home consumption **allows re export without payment of Customs Duty** if—

- (a) a shipping bill or a bill of export has been presented in respect of such goods in the prescribed form;
- (b) the export duty, penalties, rent, interest and other charges payable in respect of such goods have been paid; and
- (c) an order for clearance of such goods for exportation has been made by the proper officer.

The Section further provides that if the Central Government is of opinion that warehoused goods of any specified description are likely to be smuggled back into India, it may, **by notification in the Official Gazette, direct that such goods shall not be exported to any place outside India without payment of duty** or may be allowed to be so exported subject to such restrictions and conditions as may be specified in the notification.

Accordingly, the Government has directed vide **Notification No.45-Cus. dated 1.2.1963** (as amended) that **warehoused goods shall not be exported without payment of import duty to any place in Bhutan or Nepal**. Similar restrictions are placed in the case of warehoused goods to be exported by land to any place in Myanmar, Sikang, Tibet or Sinkiang.



However, the **warehoused goods** can be exported to **Nepal** without payment of import duty in the following circumstances:

- (a) If goods are exported against an irrevocable letter of credit in freely convertible currency;
- (b) If goods are exported for supplies to projects financed by any UN Agency or IBRD Association or ADB or any other multilateral agency of the like nature and for which payments are received in freely convertible currency; and
- (c) If the specified capital goods are supplied against a global tender invited by HMG of Nepal for which payment is received in Indian Rupees. These goods can be exported only from Jogbani or Raxaul LCS on production of bank certifies of receipt of the payment in freely convertible currency or Indian Rupees, as the case may be.



Main requirement under Section 69 of the Customs Act is to establish that the goods being exported are warehoused goods. This may require examination and verification of various parameters, including but not limited to physical properties, weight, marks and numbers, test reports, if any, documentary evidences vis-à-vis import documents etc. for identification of the goods.

Now, let's discuss **whether Warehoused Good can be Exported to Nepal & Bhutan against payment in Indian rupees?**

"There is no restriction on invoicing of export contracts in Indian Rupees in terms of the Rules, Regulations, Notifications and Directions framed under the Foreign Exchange Management Act, 1999".

Regulation 3(1)(A)(ii) of the Foreign Exchange Management(Manner of Receipt and Payment) Regulations, 2016 allows to receive payment for exports to Nepal & Bhutan in Indian rupees.

Further, in terms of Para 2.52 of the Foreign Trade Policy (2015-2020), all export contracts and invoices shall be denominated either in freely convertible currency or Indian rupees but export proceeds shall be realized in freely convertible currency. However, export proceeds against specific exports may also be realized in rupees, provided it is through a freely convertible Vostro account of a non-resident bank situated in any country other than a member country of Asian Clearing Union (ACU) or Nepal or Bhutan"

As per **Section 2 (5) of IGST Act, 2017 Exports** means "**Taking Goods out of India to a place outside India**". Here no further Conditions are attached regarding currency of Export Receipts.

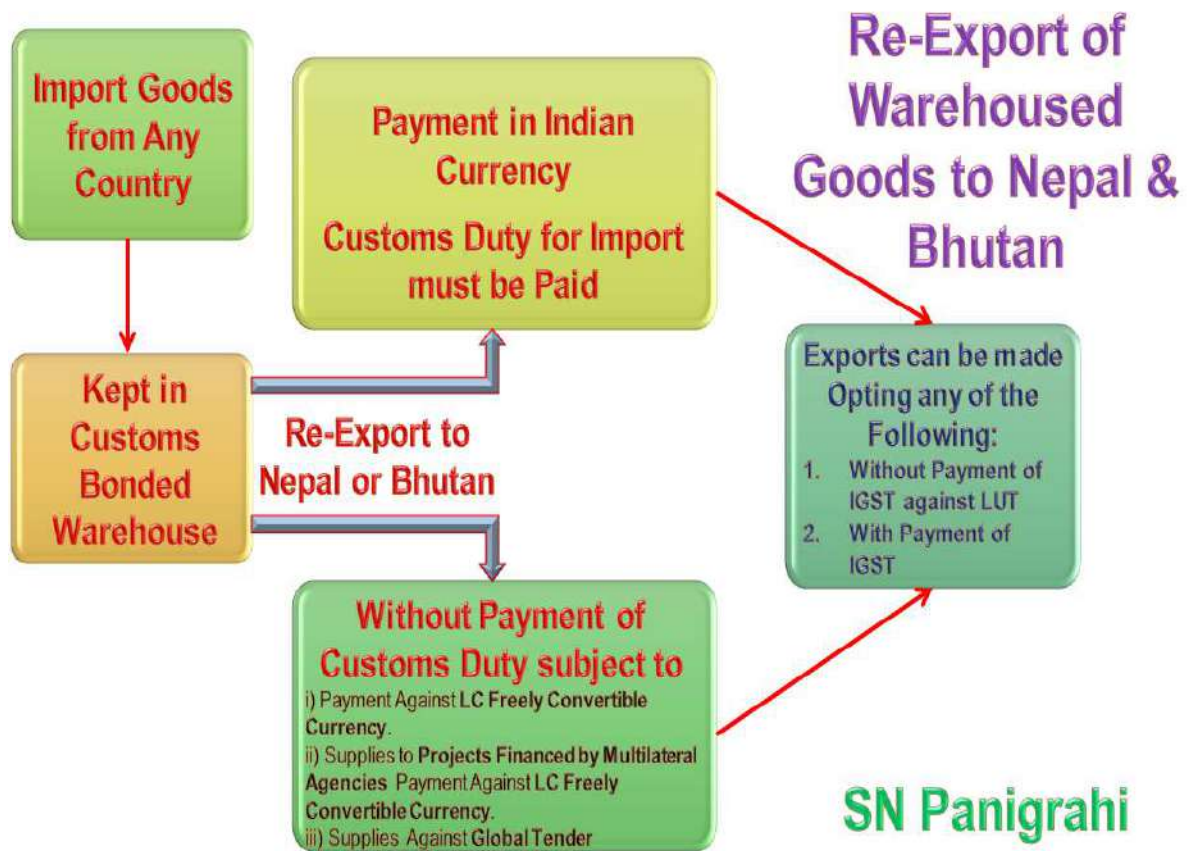
CBEC Circular no. 88/07/2-019-GST dated February 1, 2019, clarifies that the acceptance of LUT for supplies of goods or services to countries outside India will be **permissible irrespective of whether the payments are made in Indian currency or convertible foreign exchange**, as long as they are in accordance with the applicable RBI guidelines.

However, as discussed above please note that **warehoused goods shall not be exported without payment of import duty to any place in Bhutan or Nepal in case the payment is received in Indian Currency.**

Let's Clarify Next Question Whether Export can made either on under bond or Letter of Understanding (LUT) without payment of IGST or on payment of IGST?

Export of goods to Nepal or Bhutan fulfils the condition of GST Law regarding taking goods out of India. Hence, export of goods to Nepal or Bhutan will be **treated as zero rated** and consequently will also qualify for all the benefits available to zero rated supplies under the GST regime.

The Warehoused Goods can be exported either under bond or Letter of Understanding (LUT) **without payment of IGST**, where the exporter can claim refund of accumulated ITC on account of exports or **with payment of IGST** which can be claimed as refund after the goods have been exported.



Conclusion:

Warehoused goods shall not be exported without payment of import duty to any place in Bhutan or Nepal in case the payment is received in Indian Currency.

However, Warehoused goods can be Exported to Bhutan or Nepal

1. With Payment of Customs Duty.
2. Without Payment of Customs Duty if
 - a) goods are exported against **anirrevocable letter of credit in freely convertible currency**
 - b) goods are exported for supplies to **projects financed by any UN Agency**etcand for which **payments are received in freely convertible currency.**
 - c) the **specified capital goods are supplied against a global tender** invited by HMG of Nepal for which **payment is received in Indian Rupees**

Disclaimer : The views and opinions; thoughts and assumptions; analysis and conclusions expressed in this article are those of the authors and do not necessarily reflect any legal standing.

● ● ●

PUBLIC PROCUREMENT (PREFERENCE TO MAKE IN INDIA), ORDER 2017 - REVISION; REGARDING

Department for Promotion of Industry and Internal Trade, in partial modification [Paras 2, 3, 5, 10 & 13] of Order No.P-45021/2/2017-B.E.-II dated 15.6.2017 as amended by Order No.P-45021/2/2017-B.E.-II dated 28.05.2018, Order No.P-45021/2/2017-B.E.-II dated 29.05.2019 and Order No.P-45021/2/2017-B.E.-II dated 04.06.2020, hereby issues the revised 'Public Procurement (Preference to Make in India), Order 2017' dated 16.09.2020 effective with immediate effect.

Whereas it is the policy of the Government of India to encourage 'Make in India' and promote manufacturing and production of goods and services in India with a view to enhancing income and employment, and

Whereas procurement by the Government is substantial in amount and can contribute towards this policy objective, and

Whereas local content can be increased through partnerships, cooperation with local companies, establishing production units in India or Joint Ventures (JV) with Indian suppliers, increasing the participation of local employees in services and training them,

Now therefore the following Order is issued:

1. This Order is issued pursuant to Rule 153 (iii) of the General Financial Rules 2017.
2. **Definitions:** For the purposes of this Order:

'Local content' means the amount of value added in India which shall, unless otherwise prescribed by the Nodal Ministry, be the total value of the item procured (excluding net domestic indirect taxes) minus the value of imported content in the item (including all customs duties) as a proportion of the total value, in percent.

'Class-I local supplier' means a supplier or service provider, whose goods, services or works offered for procurement, meets the minimum local content as prescribed for 'Class-I local supplier' under this Order.

'Class-II local supplier' means a supplier or service provider, whose goods, services or works offered for procurement, meets the minimum local content as prescribed for 'Class-II local supplier' but less than that prescribed for 'Class-I local supplier' under this Order.

'Non - Local supplier' means a supplier or service provider, whose goods, services or works offered for procurement, has local content less than that prescribed for 'Class-II local supplier' under this Order.

'L1' means the lowest tender or lowest bid or the lowest quotation received in a tender, bidding process or other procurement solicitation as adjudged in the evaluation process as per the tender or other procurement solicitation.

'Margin of purchase preference' means the maximum extent to which the price quoted by a "Class-I local supplier" may be above the L1 for the purpose of purchase preference.

'Nodal Ministry' means the Ministry or Department identified pursuant to this order in respect of a particular item of goods or services or works.

'Procuring entity' means a Ministry or department or attached or subordinate office of, or autonomous body controlled by, the Government of India and includes Government companies as defined in the Companies Act.

'Works' means all works as per Rule 130 of GFR- 2017, and will also include *'turnkey works'*.

Eligibility of 'Class-I local supplier'/ 'Class-II local supplier'/ 'Non-local suppliers' for different types of procurement

(a) In procurement of all goods, services or works in respect of which the Nodal Ministry / Department has communicated that there is sufficient local capacity and local competition, only 'Class-I local supplier', as defined under the Order, shall be eligible to bid irrespective of purchase value.

(b) Only 'Class-I local supplier' and 'Class-II local supplier', as defined under the Order, shall be eligible to bid in procurements undertaken by procuring entities, except when Global tender enquiry has been issued. In global tender enquiries, 'Non-local suppliers' shall also be eligible to bid along with 'Class-I local suppliers' and 'Class-II local suppliers'. In procurement of all goods, services or works, not covered by sub-para 3(a) above, and with estimated value of purchases less than Rs. 200 Crore, in accordance with Rule 161(iv) of GFR, 2017, Global tender enquiry shall not be issued except with the approval of competent authority as designated by Department of Expenditure.

(c) For the purpose of this Order, works includes Engineering, Procurement and Construction (EPC) contracts and services include System Integrator (SI) contracts.

3A. Purchase Preference

(a) Subject to the provisions of this Order and to any specific instructions issued by the Nodal Ministry or in pursuance of this Order, purchase preference shall be given to 'Class-I local supplier' in procurements undertaken by procuring entities in the manner specified here under.

(b) In the procurements of goods or works, which are covered by para 3(b) above and which are divisible in nature, the 'Class-I local supplier' shall get purchase preference over 'Class-II local supplier' as well as 'Non-local supplier', as per following procedure:

- i. Among all qualified bids, the lowest bid will be termed as L1. If L1 is 'Class-I local supplier', the contract for full quantity will be awarded to L1.
- ii. If L1 bid is not a 'Class-I local supplier', 50% of the order quantity shall be awarded to L1. Thereafter, the lowest bidder among the 'Class-I local supplier' will be invited to match the L1 price for the remaining 50% quantity subject to the Class-I local supplier's quoted price falling within the margin of purchase preference, and contract for that quantity shall be awarded to such 'Class-I local supplier' subject to matching the L1 price. In case such lowest eligible 'Class-I local supplier' fails to match the L1 price or accepts less than the offered quantity, the next higher 'Class-I local supplier' within the margin of purchase preference shall be invited to match the L1 price for remaining quantity and so on, and contract shall be awarded accordingly. In case some quantity is still left uncovered on Class-I local suppliers, then such balance quantity may also be ordered on the L1 bidder.

(c) In the procurements of goods or works, which are covered by para 3(b) above and which are not divisible in nature, and in procurement of services where the bid is evaluated on price alone, the 'Class-I local supplier' shall get purchase preference over 'Class-II local supplier' as well as 'Non-local supplier', as per following procedure:

- i. Among all qualified bids, the lowest bid will be termed as L1. If L1 is 'Class-I local supplier', the contract will be awarded to L1.
- ii. If L1 is not 'Class-I local supplier', the lowest bidder among the 'Class-I local supplier', will be invited to match the L1 price subject to Class-I local supplier's quoted price falling within the margin of purchase preference, and the contract shall be awarded to such 'Class-I local supplier' subject to matching the L1 price.
- iii. In case such lowest eligible 'Class-I local supplier' fails to match the L1 price, the 'Class-I local supplier' with the next higher bid within the margin of purchase preference shall be invited to match the L1 price and so on and contract shall be awarded accordingly. In case none of the 'Class-I local supplier' within the margin of purchase preference matches the L1 price, the contract may be awarded to the L1 bidder.

- (d) "Class-II local supplier" will not get purchase preference in any procurement, undertaken by procuring entities.

3B. Applicability in tenders where contract is to be awarded to multiple bidders -

In tenders where contract is awarded to multiple bidders subject to matching of L1 rates or otherwise, the 'Class-I local supplier' shall get purchase preference over 'Class-II local supplier' as well as 'Non-local supplier', as per following procedure:

- a) In case there is sufficient local capacity and competition for the item to be procured, as notified by the nodal Ministry, only Class I local suppliers shall be eligible to bid. As such, the multiple suppliers, who would be awarded the contract, should be all and only 'Class I Local suppliers'.
- b) In other cases, 'Class II local suppliers' and 'Non local suppliers' may also participate in the bidding process along with 'Class I Local suppliers' as per provisions of this Order.
- c) If 'Class I Local suppliers' qualify for award of contract for at least 50% of the tendered quantity in any tender, the contract may be awarded to all the qualified bidders as per award criteria stipulated in the bid documents. However, in case 'Class I Local suppliers' do not qualify for award of contract for at least 50% of the tendered quantity, purchase preference should be given to the 'Class I local supplier' over 'Class II local suppliers'/'Non local suppliers' provided that their quoted rate falls within 20% margin of purchase preference of the highest quoted bidder considered for award of contract so as to ensure that the 'Class I Local suppliers' taken in totality are considered for award of contract for at least 50% of the tendered quantity.
- d) First purchase preference has to be given to the lowest quoting 'Class-I local supplier', whose quoted rates fall within 20% margin of purchase preference, subject to its meeting the prescribed criteria for award of contract as also the constraint of maximum quantity that can be sourced from any single supplier. If the lowest quoting 'Class-I local supplier', does not qualify for purchase preference because of aforesaid constraints or does not accept the offered quantity, an opportunity may be given to next higher 'Class-I local supplier', falling within 20% margin of purchase preference, and so on.
- e) To avoid any ambiguity during bid evaluation process, the procuring entities may stipulate its own tender specific criteria for award of contract amongst different bidders including the procedure for purchase preference to 'Class-I local supplier' within the broad policy guidelines stipulated in sub-paras above.

4. **Exemption of small purchases:** Notwithstanding anything contained in paragraph 3, procurements where the estimated value to be procured is less than Rs. 5 lakhs shall be exempt from this Order. However, it shall be ensured by procuring entities that procurement is not split for the purpose of avoiding the provisions of this Order.

5. **Minimum local content:** The 'local content' requirement to categorize a supplier as 'Class-I local supplier' is minimum 50%. For 'Class-II local supplier', the 'local content' requirement is minimum 20%. Nodal Ministry/ Department may prescribe only a higher

percentage of minimum local content requirement to categorize a supplier as 'Class-I local supplier'/ 'Class-II local supplier'. For the items, for which Nodal Ministry/ Department has not prescribed higher minimum local content notification under the Order, it shall be 50% and 20% for 'Class-I local supplier'/ 'Class-II local supplier' respectively.

6. **Margin of Purchase Preference:** The margin of purchase preference shall be 20%.
7. **Requirement for specification in advance:** The minimum local content, the margin of purchase preference and the procedure for preference to Make in India shall be specified in the notice inviting tenders or other form of procurement solicitation and shall not be varied during a particular procurement transaction.
8. **Government E-marketplace:** In respect of procurement through the Government E-marketplace (GeM) shall, as far as possible, specifically mark the items which meet the minimum local content while registering the item for display, and shall, wherever feasible, make provision for automated comparison with purchase preference and without purchase preference and for obtaining consent of the local supplier in those cases where purchase preference is to be exercised.
9. **Verification of local content:**
 - a. The 'Class-I local supplier'/ 'Class-II local supplier' at the time of tender, bidding or solicitation shall be required to indicate percentage of local content and provide self-certification that the item offered meets the local content requirement for 'Class-I local supplier'/ 'Class-II local supplier', as the case may be. They shall also give details of the location(s) at which the local value addition is made.
 - b. In cases of procurement for a value in excess of Rs. 10 crores, the 'Class-I local supplier'/ 'Class-II local supplier' shall be required to provide a certificate from the statutory auditor or cost auditor of the company (in the case of companies) or from a practicing cost accountant or practicing chartered accountant (in respect of suppliers other than companies) giving the percentage of local content.
 - c. Decisions on complaints relating to implementation of this Order shall be taken by the competent authority which is empowered to look into procurement-related complaints relating to the procuring entity.
 - d. Nodal Ministries may constitute committees with internal and external experts for independent verification of self-declarations and auditor's/ accountant's certificates on random basis and in the case of complaints.
 - e. Nodal Ministries and procuring entities may prescribe fees for such complaints.
 - f. False declarations will be in breach of the Code of Integrity under Rule 175(1)(i)(h) of the General Financial Rules for which a bidder or its successors can be debarred for up to two years as per Rule 151 (iii) of the General Financial Rules along with such other actions as may be permissible under law.

-
- g. A supplier who has been debarred by any procuring entity for violation of this Order shall not be eligible for preference under this Order for procurement by any other procuring entity for the duration of the debarment. The debarment for such other procuring entities shall take effect prospectively from the date on which it comes to the notice of other procurement entities, in the manner prescribed under paragraph 9h below.
 - h. The Department of Expenditure shall issue suitable instructions for the effective and smooth operation of this process, so that:
 - i. The fact and duration of debarment for violation of this Order by any procuring entity are promptly brought to the notice of the Member-Convenor of the Standing Committee and the Department of Expenditure through the concerned Ministry /Department or in some other manner;
 - ii. on a periodical basis such cases are consolidated and a centralized list or decentralized lists of such suppliers with the period of debarment is maintained and displayed on website(s);
 - iii. in respect of procuring entities other than the one which has carried out the debarment, the debarment takes effect prospectively from the date of uploading on the website(s) in the such a manner that ongoing procurements are not disrupted.

10. Specifications in Tenders and other procurement solicitations:

- a. Every procuring entity shall ensure that the eligibility conditions in respect of previous experience fixed in any tender or solicitation do not require proof of supply in other countries or proof of exports.
- b. Procuring entities shall endeavour to see that eligibility conditions, including on matters like turnover, production capability and financial strength do not result in unreasonable exclusion of 'Class-I local supplier'/ 'Class-II local supplier' who would otherwise be eligible, beyond what is essential for ensuring quality or creditworthiness of the supplier.
- c. Procuring entities shall, within 2 months of the issue of this Order review all existing eligibility norms and conditions with reference to sub-paragraphs 'a' and 'b' above.

d. Reciprocity Clause

- i. When a Nodal Ministry/Department identifies that Indian suppliers of an item are not allowed to participate and/ or compete in procurement by any foreign government, due to restrictive tender conditions which have direct or indirect effect of barring Indian companies such as registration in the procuring country, execution of projects of specific value in the procuring country etc., it shall provide such details to all its procuring entities including CMDs/CEOs of PSEs/PSUs, State Governments and other procurement agencies under their administrative control and GeM for appropriate reciprocal action.

- ii. Entities of countries which have been identified by the nodal Ministry/Department as not allowing Indian companies to participate in their Government procurement for any item related to that nodal Ministry shall not be allowed to participate in Government procurement in India for all items related to that nodal Ministry/ Department, except for the list of items published by the Ministry/ Department permitting their participation.
 - iii. The stipulation in (ii) above shall be part of all tenders invited by the Central Government procuring entities stated in (i) above. All purchases on GeM shall also necessarily have the above provisions for items identified by nodal Ministry/ Department.
 - iv. State Governments should be encouraged to incorporate similar provisions in their respective tenders.
 - v. The term 'entity' of a country shall have the same meaning as under the FDI Policy of DPIIT as amended from time to time.
- e. Specifying foreign certifications/ unreasonable technical specifications/ brands/ models in the bid document is restrictive and discriminatory practice against local suppliers. If foreign certification is required to be stipulated because of non-availability of Indian Standards and/or for any other reason, the same shall be done only after written approval of Secretary of the Department concerned or any other Authority having been designated such power by the Secretary of the Department concerned.
- f. "All administrative Ministries/Departments whose procurement exceeds Rs. 1000 Crore per annum shall notify/ update their procurement projections every year, including those of the PSEs/PSUs, for the next 5 years on their respective website."

10A. Action for non-compliance of the Provisions of the Order: In case restrictive or discriminatory conditions against domestic suppliers are included in bid documents, an inquiry shall be conducted by the Administrative Department undertaking the procurement (including procurement by any entity under its administrative control) to fix responsibility for the same. Thereafter, appropriate action, administrative or otherwise, shall be taken against erring officials of procurement entities under relevant provisions. Intimation on all such actions shall be sent to the Standing Committee.

11. Assessment of supply base by Nodal Ministries: The Nodal Ministry shall keep in view the domestic manufacturing / supply base and assess the available capacity and the extent of local competition while identifying items and prescribing the higher minimum local content or the manner of its calculation, with a view to avoiding cost increase from the operation of this Order.

12. Increase in minimum local content: The Nodal Ministry may annually review the local content requirements with a view to increasing them, subject to availability of sufficient local competition with adequate quality.

13. Manufacture under license/ technology collaboration agreements with phased indigenization: While notifying the minimum local content, Nodal Ministries may make special provisions for exempting suppliers from meeting the stipulated local content if the product is being manufactured in India under a license from a foreign manufacturer who holds intellectual property rights and where there is a technology collaboration agreement / transfer of technology agreement for indigenous manufacture of a product developed abroad with clear phasing of increase in local content.

13A. In procurement of all goods, services or works in respect of which there is substantial quantity of public procurement and for which the nodal ministry has not notified that there is sufficient local capacity and local competition, the concerned nodal ministry shall notify an upper threshold value of procurement beyond which foreign companies shall enter into a joint venture with an Indian company to participate in the tender. Procuring entities, while procuring such items beyond the notified threshold value, shall prescribe in their respective tenders that foreign companies may enter into a joint venture with an Indian company to participate in the tender. The procuring Ministries/Departments shall also make special provisions for exempting such joint ventures from meeting the stipulated minimum local content requirement, which shall be increased in a phased manner.

14. Powers to grant exemption and to reduce minimum local content: The administrative Department undertaking the procurement (including procurement by any entity under its administrative control), with the approval of their Minister-in-charge, may by written order, for reasons to be recorded in writing,

- a. reduce the minimum local content below the prescribed level; or
- b. reduce the margin of purchase preference below 20%; or
- c. exempt any particular item or supplying entities from the operation of this Order or any part of the Order.

A copy of every such order shall be provided to the Standing Committee and concerned Nodal Ministry / Department. The Nodal Ministry / Department concerned will continue to have the power to vary its notification on Minimum Local Content.

15. Directions to Government companies: In respect of Government companies and other procuring entities not governed by the General Financial Rules, the administrative Ministry or Department shall issue policy directions requiring compliance with this Order.

16. Standing Committee: A standing committee is hereby constituted with the following membership:

Secretary, Department for Promotion of Industry and Internal Trade—Chairman
Secretary, Commerce—Member
Secretary, Ministry of Electronics and Information Technology—Member
Joint Secretary (Public Procurement), Department of Expenditure—Member
Joint Secretary (DPIIT)—Member-Convenor

The Secretary of the Department concerned with a particular item shall be a member in respect of issues relating to such item. The Chairman of the Committee may co-opt technical experts as relevant to any issue or class of issues under its consideration.

17. Functions of the Standing Committee: The Standing Committee shall meet as often as necessary, but not less than once in six months. The Committee

- a. shall oversee the implementation of this order and issues arising therefrom, and make recommendations to Nodal Ministries and procuring entities.
- b. shall annually assess and periodically monitor compliance with this Order
- c. shall identify Nodal Ministries and the allocation of items among them for issue of notifications on minimum local content
- d. may require furnishing of details or returns regarding compliance with this Order and related matters
- e. may, during the annual review or otherwise, assess issues, if any, where it is felt that the manner of implementation of the order results in any restrictive practices, cartelization or increase in public expenditure and suggest remedial measures
- f. may examine cases covered by paragraph 13 above relating to manufacture under license/ technology transfer agreements with a view to satisfying itself that adequate mechanisms exist for enforcement of such agreements and for attaining the underlying objective of progressive indigenization
- g. may consider any other issue relating to this Order which may arise.

18. Removal of difficulties: Ministries /Departments and the Boards of Directors of Government companies may issue such clarifications and instructions as may be necessary for the removal of any difficulties arising in the implementation of this Order.

19. Ministries having existing policies: Where any Ministry or Department has its own policy for preference to local content approved by the Cabinet after 1st January 2015, such policies will prevail over the provisions of this Order. All other existing orders on preference to local content shall be reviewed by the Nodal Ministries and revised as needed to conform to this Order, within two months of the issue of this Order.

20. Transitional provision: This Order shall not apply to any tender or procurement for which notice inviting tender or other form of procurement solicitation has been issued before the issue of this Order.

Source : Ministry of Commerce and Industry

● ● ●

ECOMMERCE TRENDS THAT ARE POWERING ONLINE RETAIL FORWARD

The ecommerce industry is always changing and this year has been no different. More than ever, merchants are creating and/or improving their ecommerce businesses to meet customers where they are. While it may seem like everything in ecommerce is evolving, we narrowed it down to the biggest trends that will affect businesses in the coming months and years.

14 Ecommerce Trends Leading the Way

We spoke with leaders in the industry about the changes this year and they had a lot to share. So, let's explore the biggest ecommerce trends and see where things are headed.

1. AR enhances the reality of online shopping.
2. There will be a growing volume of voice search.
3. AI helps shops learn about shoppers.
4. On-site personalization uses those insights to create individualized experiences.
5. Big data plays a big part in creating personalized experiences.
6. Chatbots improve the shopping experience.
7. Mobile shopping is still on the move.
8. More ways to pay.
9. Headless and API-driven ecommerce allow continued innovation.
10. Customers respond to video.
11. Subscriptions keep customers coming back.
12. Sustainability is becoming more important.
13. Businesses should optimize digital strategy for conversion.
14. B2B is growing...and changing.

1. Augmented reality enhances the reality of online shopping.

Augmented reality (AR) has been a complete game changer for ecommerce. With this type of technology, shoppers can truly see the item they're shopping for, which helps them make a buying decision. AR really changes the shopping experience in specific industries, such as fashion and home decor because the customer can get a better feel for the item without seeing it in-person. In 2019, Gartner predicted that 100 million consumers will shop using AR by 2020, so it will be interesting to see how that shakes out next year.

Michael Prusich, Director of Business Development at 1Digital Agency, agrees with this prediction:

"Polls have shown some really powerful numbers in regards to AR too: 35% of people say that they would be shopping online more if they could virtually try on a product before buying it, and 22% would be less likely to visit a brick-and-mortar store if AR was available via their favorite ecommerce store. AR grants a person with the ability to not just see a 3D model of a product but lets a user see how it looks if they were actually wearing it. Some products and industries lend themselves better to traditional shopping methods, but AR is going to shake things up sooner than later."

Tessa Wuertz, Director of Marketing & Partnerships, efelle.com, also sees the potential for even smaller to

midmarket businesses joining the trend:

"We are expecting a lot more businesses to utilize AR for their products and businesses — so much so that it will become more standard in ecommerce and social media platforms. We're seeing it put to use with larger companies, but I think we're soon going to start seeing it become mainstream for businesses of all sizes."

2. There will be a growing volume of voice search.

Not only do more people own smart speakers, but they also rely on voice assistants to complete daily tasks. Loop Ventures forecasts that 75% of U.S. households will own a smart speaker by 2025. As more homes adopt smart speakers, more consumers will utilize voice search to shop online, order food and organize their lives. The rise of voice search creates an opportunity for ecommerce businesses in terms of keywords and content. David Zimmerman, Director of eCommerce Solutions, Kensium, included "more involvement of voice-enabled solutions in the commerce space with Amazon Alexa and Google Home" high on his list of 2020 trends to keep an eye on.

3. AI helps shops learn about shoppers.

Artificial Intelligence (AI) and machine learning make it possible for the customer to have automated, personalized shopping experiences. AI is continuously collecting data on how a customer shops, when they buy purchases and what they're looking for in a product or a service. It's a piece of technology that really can't be replicated in-store. Ron Smith, Editor in Chief, The Digital Outdoor, emphasizes how the complexity of AI and the ability to make it more human is also increasingly important:

"People want to know that brands care about them, and AI will be programmed accordingly. We have currently seen the opposite behavior on social media, where AIs learn from humans' more negative remarks, but it's highly likely that consumers will crave the impact. If bots can learn how to form sentences to convey an emotion, companies can soon teach them to offer comfort and products based on customers' moods."

4. On-site personalization uses those insights to create individualized experiences.

Buyers of all sorts — including B2C and B2B — are looking for personalized, custom shopping experiences online. The data collected from AI is what makes it possible for a buyer to get personalized product recommendations and detailed customer service. Implementing personalized experiences on-site or in marketing efforts has been shown to have a strong effect on revenue, with one study finding it had a 25% revenue lift for retailers scaling advanced personalization capabilities.

For further context, this accounted for 19% of participating companies while retailers that were "building basic personalization capabilities" achieved "a revenue lift of 10% or more; the retailers in this tier account for 40% of the participating companies. Kaleigh Moore, freelance writer and ecommerce specialist, sees AI-powered

personalization becoming increasingly relevant in 2020:

“As brands harness and leverage more data, they’ll be able to create incredibly relevant experiences for shoppers that feel tailor-made.”

5. Big data plays a role in creating personalized experiences.

Today, many consumers are more aware that ecommerce sites are collecting personal data, which puts them at risk. Because of this, experts have mixed feelings about the benefits of big data and how it affects the personalized shopping experience.

Luis Catter, Conversion Rate Optimization Expert at Kensium Solutions, has his own predictions for how personalization will continue to evolve alongside data concerns:

“As the tech giants continue to expand and bring more services in-house, personalization will eventually make its way to the internet of things. In addition to seeing suggestions on search engines or shopping platforms, we’ll also see them on our thermostats and our doorbell cameras. However, with some of the legislation being enacted, we’ll be able to opt out of it. This will create an interesting dichotomy — people who have ultra-personalized experiences and those who do not. This will have interesting impacts on how we as marketers are able to reach new users.”

6. Chatbots improve shopping experiences.

Chatbots interact with online shoppers much like an in-store sales associate would do. Today’s shopper wants to be able to find and buy a product in just a few clicks, and if they can’t, they get frustrated. This is where a chatbot can step in and save the sale. Experts predict that 80% of businesses will be using chatbots in 2020.

Shane Barker, Founder and CEO of ecommerce thought leadership blog shanebarker.com/blog posits:

“Chatbots are all the rage today for customer support. However, I think they’ll drastically change the way people shop online. They’ll become one of the most important marketing tools. In the retail space, self-checkout kiosks will probably become the norm and in-store marketing will increase.”

Duran Inci, CEO of Optimum7, sees chatbots becoming increasingly personalized to improve the customer experience:

“The same way chatbots are becoming more intuitive, so do I think that personal shopping assistant bots online will become more prevalent, using previous data to help anticipate new products that you’ll like. Similar to Amazon’s suggestions for similar products.”

7. Mobile shopping is still on the move.

Mobile shopping allows customers to make purchases from anywhere, which is vital in today’s world. However, if your ecommerce site isn’t responsive on mobile or through web apps, you’ll be missing out on big opportunities. Shoppers who are mobile users want the added convenience, plus the ability to pay digitally. In 2019, Statista estimated that by the end of 2021, 73% of ecommerce sales will take place on a mobile device.

Corey Dubeau, VP of Marketing at Northern Commerce, is one of many who see “improved quality and more mobile payment integrations” to be a harbinger of change in 2020.

8. More ways to pay.

Customers have individual needs when it comes to payment methods, but they might cancel a potential sale if they can’t pay how they want on an ecommerce website. Offering a wide variety of ways to pay is a good way to increase conversion rates on mobile devices. Plus, if customers can save their payment information on your site, they’ll be able to checkout even faster the next time they make a purchase.

Joe Chilson, Head Writer and Account Manager, 1Digital Agency sees centralization of payments also making strides in 2020:

“Think about how easy it would be to buy a product on any website if, at checkout, you could simply give them an ID unique to you. This unique ID would be for a centralized wallet service that would securely store all your payment info, shipping and billing addresses, preferences, etc. Companies like Apple and PayPal have taken shots at this in the past, but I think it could become more normalized.”

9. Headless and API-driven ecommerce allow continued innovation.

Headless commerce is a solution that allows an online store’s ecommerce platform to be completely decoupled from the frontend presentation layer.

More ecommerce businesses are adopting headless because of its flexibility on the backend, plus the added SEO, content marketing and digital experience capabilities.

LARQ Ecommerce Architect Antonio Kaleb explains: “With headless, we get more control over our content and customer journey through checkout. We had a multi-region need that was solved for with the headless BigCommerce solution, allowing us to combine all of our stores into one single domain, for which we have developed additional features.”

10. Customers respond to video.

Video proved to be a great way to engage customers in 2019, and it’s not going away anytime soon. Creating videos for your website is a great way to instantly grab and engage a customer and inform them about your product or service.

Ron Smith, Editor in Chief, The Digital Outdoor considers how video can be used to help educate customers:

“I see the use of podcasting and short video content to augment the opportunity for buyers to learn about how an ecommerce brand’s products and services provide the solution to the opportunity, challenge or problem a buyer is looking to answer. With these two forms of content development comes the technology to micro track a viewer’s engagement...”

Shane Barker further emphasizes the importance:

“The importance of videos can’t be understated. Videos can help you explain and showcase your products better than images ever can. You should consider adding videos of your products in your ecommerce store.”

11. Subscriptions keep customers coming back.

There are subscriptions of all sorts these days and their convenience is attractive for consumers. For companies, subscription services create a way to plan for inventory and sales that are already locked in.

David Zimmerman, Director of eCommerce Solutions, Kensium still predicts that “more companies will offer subscription services or monthly payment options for larger purchases” in the coming year.

12. Sustainability is becoming more important.

Consumers and businesses alike are becoming more aware of the environment. Because of this, consumers are being more conscious about where they shop and the impact it has on the environment and related effects.

One survey found that 50% of respondents wanted more sustainability in the fashion industry, and 75% wanted to see less packaging.

Many businesses are finding ways to be more eco-friendly by going paperless when possible, using biodegradable packaging, and using recyclable supplies.

13. Businesses should optimize digital strategy for conversion.

Getting potential customers to your site is one task but getting them to convert is another. In 2020, businesses are looking to improve their conversion rates by optimizing their product pages. Multi-channel selling is also another way to get conversions, whether through Facebook advertising or shopping ads on Google.

Scott Ginsberg, Head of Content, Metric Digital adds:

“More and more brands are competing for the same eyes. Facebook’s algorithm rewards video and motion-based creative that are more likely to hook your audience quickly. And customers are also more demanding, impatient and curious than ever before. Make sure you understand the ins and outs of Performance Ad Creative that doesn’t only look cool, but also drives conversions. Using those channels intelligently is the best way to make sure your brand will be uniquely positioned to stand out in the continually changing digital marketing landscape.”

14. B2B is growing...and changing.

If you were ever worried that B2B would go out of style, fear not. Global retail ecommerce sales for B2B are expected to reach \$1.1 trillion in 2021, according to data from Statista.

Forrester predicts that by 2020 almost half of all adults will be Millennials, which also means an increase in Millennial B2B buyers. Both of these audiences want to be able to easily research their needs and related products without conversing with salespeople.

B2B ecommerce brands are working to meet these needs. Connie Wong, Marketing Manager, Silk Software, talks about this transition:

“The days of orders needing to be placed through fax order forms or phone calls only are shrinking. More and more businesses are beginning to see the value in servicing their customers online. By automating these tasks through their ecommerce site, teams are moving away from spending the bulk of their time on processing order entries from email spreadsheets or hard copy forms. Instead, they are shifting their focus towards what matters most: engaging with customers, providing them with an excellent customer experience, and establishing ongoing client relationships.”

Weighing Your Options: Deciding if a Trend Makes Sense

for Your Business

Not every trend is worth jumping on, but which one deserves your time and effort? While some will provide a huge value-add, others might be out of touch with your particular audience or might be too costly to implement for your business to maintain a reasonable ROI.

Knowing what trends will be a good fit for you will often come down to knowing your own customers, vertical, and competitors backwards and forwards. There’s several things you can do to evaluate industry trends and make the right move for your B2B.

1. Keep track of industry influencers and publications.

Follow blogs and related news in the industry so you can stay on top of what’s happening. Start by finding influencers and publications related to your industry specifically, and then branch out into other markets to get the whole picture.

2. Absorb up-to-date industry research and trends reports.

Every industry changes at some point or another, and staying up to date via reports and data can show you where things are headed. The numbers in these reports often come from original research you can trust, instead of just following the popular word-on-the-street. Plus, when you’re regularly aware of what’s happening in your industry, you’ll grow a sense of what trends are worth the effort and what ones can wait.

3. Make the most of digital tools and analytics to assess your customers’ behavior.

Use customer data to evaluate if a trend is right for you. What do the numbers show? Many trends might work for other businesses, but you know your customers best. Consider utilizing more than one data gathering tool so you can see customer trends from different sources. Use these numbers to see the overall trends in your business. Would adopting a new trend interrupt your customer behavior?

4. Get feedback from your customers.

Don’t be afraid to ask current customers what they need. Getting feedback from current customers can give you insight into trends, and you can create more specific plans for the future. You never know, a customer might even suggest an idea you hadn’t thought of yet.

5. Observe your competitors.

Take a look at your competitors. Did they jump on a specific trend? If so, how did it work for them? Of course, you don’t have to do everything your competition is doing, but being aware is another way to measure a trend.

Conclusion

Okay, so there’s a lot of new things happening in ecommerce. Technology and people are always evolving, and since ecommerce brings it all together, we are always going to be looking toward the future. One thing is for sure, is that it’s never too late to jump right in, learn something new, and evaluate if it’s right for your business. For now, consumers are in the driver’s seats and ecommerce businesses will be customizing the journey ahead for them.

Source: www.bigcommerce.com

●●●



FLUID COMPUTING FOR SUPPLY CHAIN MANAGEMENT : NEXT ECONOMIC DISRUPTION

NEEL VITHALANI

Fluid computing is fast becoming a reality as the digitalization of services and products continues to grow. Right from self-driving cars to smart home appliances, every product is developed to utilize a cloud-based architecture to orchestrate them as a group of devices, applications, and sensors aligned to facilitate common objectives. However, due to bandwidth limitations and latency-based potential hazards, cloud computing cannot be used in a full-fledged system with intercoupled IoT and IIoT systems.

Fluid computing is the umbrella term used for a distributed cloud, mist, fog, and edge computing system. Today, we will understand what Fluid Computing is and how it can help redefine the way supply chains function. Dive in deeper to explore the world of fluidic intelligence flowing across devices and applications.

The Basics of Fluid Computing

Every futuristic city is imagined with self-driving cars, intelligent fleet management, smart infrastructure, health, and citizens. All of them need to be interconnected, and the current infrastructure cannot support such hyperconnectivity instances in a continuum. The cost of providing adequate bandwidth and latency would make such networks unaffordable and monopolize the internet data market. This will also bring back the era of telecom giants controlling the market with very little competition and overwhelming entry barriers.

I would also like to point out the fact that streaming a half an hour video content on an OTT platform like Netflix releases carbon emissions equivalent to driving a car for 200 meters. Even if we improve the current resource utilization rates at data centers, which are below 60% for CPUs and below 50% for memory, latency issues will still downplay the ecosystem.

The term fluid computing isn't mainstream even in the tech industry. In fluid computing, the data flows across application states through replication and real-time synchronization by middleware. It allows the application state to flow in both synchronous and asynchronous modes to behave as a single system distributed among multiple devices with multi-person collaboration facilities.

As the name indicates, the cloud is the topmost layer, the mist is next in order followed by fog and ultimately the edge (devices.) The application state flows across all of the above-mentioned layers (server systems connected by a common network framework) and the edge to execute

multiple processes in close coordination with all connected devices and stakeholders.

In simple words, fluid computing enables the localization of data processing. It allows you to push the intelligence towards the location where devices are being utilized.

The Need for Fluid Computing Explained: A Hypothetical Case

For instance, if a wildfire breaks out in a smart city, the temperature control system of all smart houses will start alerting the firefighters. The smartwatches and all connected gadgets will alert users who will, in turn, try to leave using self-driving vehicles. Intelligent fleet management systems will try to divert the traffic while the parked vehicles will also start evacuating. The activity in such scenarios cannot be exactly predicted, and hence, it will pressurize the network beyond its capacity.

On the other hand, the bandwidth costs for meeting such requirements won't be feasible for year-round deployment. It would be best if the devices process the data themselves to minimize their dependency on the network in such cases. Thus, to minimize the perils of cloud computing, a distributed networking infrastructure with autonomous decision-making capabilities for optimizing processing power with respect to network availability and the need for localization emerged in the form of fluid computing.

Fluid Computing for Supply Chain Management

The eCommerce sector can be used as a classic example of how supply chains are facing the heat as the number of users increases. The cost of shipping products is increasing consistently as the number of deliveries continues to increase on a YoY basis. The more a parcel changes hands between pickup point and delivery location, the more it gets complicated, time-consuming, and costly. This applies equally to the entire global supply chain ecosystem, which is much larger, complex, and the demand-supply correlations govern it.

Connecting the manufacturing processes, sales forecasting, warehousing, order management, transport, and distribution for an integrated supply chain will require reinforcing all components with data processing capabilities. The integration of all stakeholders ranging from demand generators to demand fulfillers will require a mammoth network. This translates to connecting the IoT systems of the demand generation centers to the

IIoT systems of the manufacturers, logistics, distributors, and sellers to form a hyperconnected supply chain.

This will reduce the bottlenecks and allow the supply chain to function with unparalleled agility. This could help suppliers understand the demand patterns better and mobilize their distribution systems in a predictive way. Thus, it will lower the time required for moving goods through the supply chain, reduce costs, minimize wastage, and utilize the resources in an unprecedentedly optimized manner. In a way, fluid computing is going to become a breakthrough for supply chain management since it will focus on refining the exchange of goods across touchpoints instead of minimizing them through arbitrary compensations.



Supply Chain Equipment And Processes to be Covered by Fluid Computing

In this section, I am dividing the equipment and processes into two parts: demand generation and demand fulfillment. This will make it easy for readers to understand the application of fluid computing. Read ahead to see how various devices and processes will complete the supply chain:

Demand Centers: Fluid computing-based CIoT (Consumer Internet of Things) and software-managed processes form part of the demand generation part of the supply chain. The primary sources activating the supply chain will be the consumer devices. Home appliances like gas stoves, refrigerators, and deep freezers act as demand indicators for food, while the CIoT-based appliances for cooling, heating, ambiance, security, and housekeeping, along with utility services data, will be used for predictive maintenance. Apart from the consumer-initiated orders, the real-time data regarding demand consumption will make sales forecasting more accurate. Mostly, the consumer end will provide data for the supply chain management using sensors on their devices.

Sensors will be employed for identifying the current location of the demand for generating appliances and processes along with the stakeholders.

They will also help understand the current availability of goods at demand centers in terms of on-premise, under transient, pre-ordered, and stock available for sale at

nearby distribution channels/centers.

They will help track the real-time shipping status of products and recommend consumption pattern changes as required.

They will also authenticate the demand figures to avoid hoarding and under the availability of products at the end-user level. Sensors will also allow users to track the health of their devices and consumables used in them. The important data regarding the rate of consumption, consumption patterns against historical demand data, and expected replenishment volume dates.

However, the appliances and CIoT networks will also require processing power to localize the decision-making. This means minimizing the synchronous data transfer for computation and shifting to asynchronous report exchanges heavily. If a device is suspecting breakdown, it should follow a standard operating procedure and prompt maintenance teams without waiting for centralized servers.

In the same way, the data transfer should materialize between the demand center and manufacturing/logistics firms without mediation. The role of centralized servers should be reduced to analytics and ensuring fair practices while doubling as a shared ledger for all stakeholders of the supply chain. They shall act as compliance enforcing systems that distribute data through multi-tenancy solutions to streamline order processing without damaging any stakeholder's rights.

There will be a need for integrated shipping management systems that facilitate a common infrastructure for the delivery of all products towards the demand centers. Perhaps, the smart fleets of private and passenger vehicles will form the most important part of the supply chain in the future. Instead of shipping vendor-owned vehicles, using readily moving smart cars can help lower users' transportation cost by allowing the logistics companies to utilize a certain portion of their storage spaces in their vehicles in exchange for compensation. Swappable storage compartments may also become a reality along with swappable batteries in the future. Robots will also play an important role in servicing the CIoT systems along with facilitating and authenticating doorstep delivery of products.

Demand Fulfillment : The demand fulfillment portion consists of manufacturing, distribution, and logistics mainly. This portion also includes e-commerce sellers and retailers who drive sales through their marketing activities and create demand with the help of advertisements. In the below section, the latter part of the supply chain is described:

The autonomous inspection systems will deploy heavy quality control for inspection of raw materials and semi-finished goods that will filter out any substandard item autonomously and send necessary reports to the concerned parties. The warehouse management systems will also utilize sensors to track the storage conditions of

the raw materials and finished goods within the premises. Inventory management will become a distributed process carried by all stakeholders. The purchase management solutions will track the goods in transient and prompt the user in case of any probable shortcomings. They will also keep secondary suppliers on hold in case of expected failure in fulfillment.

The orders made on the eCommerce sites and by retailers will be used along with user-generated data for better sales forecasting and streamline forecasting. The manufacturing facilities will be heavily automated with the help of sensors, actuators, robots, software-backed processes, and quality management. Asset management and resource utilization in IIoT-enabled manufacturing facilities will allow unparalleled transparency coupled with state-of-the-art security systems to lower manufacturing prices without compromising on product quality.

The smart fleets used for transportation and deliveries will use various sensors to track the condition of goods and vehicles. In case of any natural disaster or major blockage of roads in the travel route, they will also help in deciding the best alternative routes. The logistics companies will be able to tie up with maintenance technicians and garages along with moteliors for minimizing breakdowns.

Using the fluid computing infrastructure on the demand fulfillment end will result in smarter individual devices, IIoT software packages for individual applications, and extreme localization at all cascading processing centers. The resultant system will resemble an ecosystem of interconnected devices instead of infrastructure. The cost of using computation systems will surely increase initial costs for all devices and supporting systems.

The manufacturers of all appliances and machinery for both consumer and industrial users will have to upgrade their devices with Digital Signal Processors (DSP), Media Processors, Microcontrollers, Microprocessors, and Embedded Processors. This essentially translates to a complete makeover of all equipment designs and reversing the current approach of adding network capabilities instead of creating autonomous devices.

Roadmap for Implementing Fluid Computing in Supply Chain Management with Current Challenges

The roadmap for implementing fluid computing must start by establishing the equipment design standards for common utilization by third-party stakeholders through a unified architecture of middleware. This will require the device and appliances manufacturers to consider certain design changes and modifications that don't fit into their product's scope. Retrofitting could be a cost-effective solution for heavy machinery and other capital-intensive assets.

The fluid computing middleware should allow a great degree of freedom to connect devices to make decisions and interact with their deployment environment. A globally recognized software testing standard will also be

needed to ensure the security and successful deployment of various devices of a different make. They should be similar in nature to the ISO standards for IoT software testing. They shall also include provisions for microservices-based solutions to incorporate better stability despite advances in different device technologies.

A Hypothetical Example of Fluid Computing in Supply Chain Management

Consider the case of ordering a shaving product- Gel. Your razor will come up with sensors that not only track your shave quality and tell you if you're missing on some spots of your beard. The razor will also order a replenishment using your shaving gel consumption rate and prices to purchase the right order quantity. Your shelf will also provide data regarding the current stock and storage space available. This way, only the required quantity is ordered for the best deal available.

The manufacturer of your preferred shaving gel will receive the order in advance before you empty your current stock. They'll purchase only the required quantity of raw materials and at the right time. The shipping company will pick up your order and use smart fleets with swappable compartments to deliver it to your doorsteps. Chances are, your neighbor will receive your shaving gel at a traffic signal right in his car's boot storage, and a robot will pick it up for you from his garage and place it on your shelf.

Thus, you can continue enjoying perfect shaves without even looking at how much shaving gel you're left with, let alone driving to a nearby store to get it. Sounds great, doesn't it?

Summing Up : Apart from pushing intelligence towards the edge, fluid computing will also develop distributed architecture models that act as interdependent entities that follow computation protocols for defined use cases and communicate efficiently without consuming huge network bandwidths. The telcos are also viewing 5G as their bid to bridge the networking and infrastructure gap between consumers and industries, finds Capgemini. We can also expect its collaboration with other advanced technologies like machine learning, AI, and blockchain. Fluid computing will surely cause the next economic disruption by expediting the flow of information and goods at an unprecedented speed, transparency levels, and at reduced operation costs.

Neel Vithalani

Neel is a creative who's always ready to lay his hands on anything that is innovative and captures masses. He is currently working with Orderhive. Apart from technology and business practices, he drools over psychology, history, and cinematography. You can find him on hiking trips, talking over anything from alien belief systems to 90's cartoon shows

Source: orderhive.com

● ● ●

FREIGHT TECHNOLOGY: HOW EMERGING TECH IS RESHAPING THE LOGISTICS INDUSTRY

CHRISTIAN GUAJARDO IS DIGITAL MARKETING SPECIALIST AT FORAGER.

Whatever the next crisis is, companies are more likely to survive (and even flourish) if they are willing to reinforce their supply chains with technology and leave the pen and paper behind.

For decades, the logistics industry has relied on a core, largely consistent set of methodologies and tools to manage supply chains, people and communications. From phone calls and emails to good old pen and paper, as much as freight has changed over the past decade, many of its processes still rely on analog solutions. The idea that a multi-trillion-dollar industry rests on the shoulders of largely outdated processes is concerning. The truth is, there are a lot of moving parts (no pun intended) in logistics, and while these processes are tried-and-true, they are quickly losing their place in an industry that demands efficiency.

So, what are the alternatives?

To be honest, there aren't as many substitutions as there are replacements. Companies are quickly beginning to revamp their supply chain's efficiency by means of new technology and operational models.

The integrated freight marketplace

The last few years have seen phone calls and email chains replaced by algorithms and digital platforms. Waiting hours for a call or a confirmation email wastes time, resources, and ultimately, money. More and more logistics professionals are looking for ways to automate away those rote tasks while simultaneously creating a more coherent communication stream across the entire supply chain.

As evidenced by the mass Coronavirus disease (COVID-19) disruptions and the more recent Suez Canal incident, being able to respond to delays in real time is not just convenient, but critical, for modern logistics.

Digital marketplaces are helping move the needle for both data sharing and transactions. By consolidating parties onto a single platform, it's easier to connect shippers and providers more directly and in real-time.

What is a managed marketplace?

Managed marketplaces are online portals that help shippers and carriers connect via a live, interactive platform while providing the background operational support of a more traditional brokerage.

Marketplaces allow for:

- Shippers to find carriers to move their product.
- Carriers to filter through loads from multiple sources.
- Real-time pricing and capacity.
- Customer-carrier matching.
- Online support.

This means that carriers no longer need to make multiple phone calls to fill their trucks or to get details on a specific load. It can also help reduce their empty miles and improve overall efficiency.

For shippers, marketplaces provide access to a large network of carriers and an easy way to intake bids. Because the marketplace is managed, the carriers are all fully vetted, and in some marketplaces, scored based on service. This means that shippers can enjoy the volume of carriers offered on a traditional load board, while still having the peace of mind provided by a more carefully cultivated pool of drivers.

Integrations have become a popular feature of transportation management systems (TMS) as well as managed marketplaces. Rather than having to learn how to use a new platform, many businesses are now able to integrate these new tools and features into their current TMS and existing portals.

Integrating enhancements into pre-existing platforms creates a shorter learning curve and speeds up adoption for users. This translates into less time figuring out how to use something and more time actually using it.

Tracking and visibility : One other feature some platforms offer is real-time tracking, which brings invaluable visibility to shippers. Drivers are spared the hassle of reporting their location and ETAs while shippers can regularly check in on their freight's location whenever convenient. This is particularly useful and arguably necessary when transporting goods cross-border.

The case for cross-border technology : Mexico is notorious for being a region where freight can become lost or unheard of until it arrives at its destination. Known as the "black hole" of freight, Mexico does not have the same ELD regulations as the United States or Canada. A cross-border shipment is a multi-party process with numerous handoffs on both sides of the

border.

A typical Mexico-U.S. northbound shipment can involve up to six people just to effectively communicate a truck's location:

1. The driver
2. The dispatcher
3. Mexican fleet manager
4. U.S. fleet manager
5. Logistics provider
6. Typically, a rep from that same provider

This same group of people would be responsible for communicating location on a southbound leg as well. What you get are hours of waiting and multiple phone calls before a shipper knows where their freight is. By the time that happens, the location has already changed. This wastes time and money, can create freight safety concerns, and ultimately, hinders a supply chain's effectiveness.

By taking a proactive approach at utilizing tracking tools, shippers and carriers can improve visibility and ultimately profit by maintaining a tighter grip on their freight and minimizing the parties involved in their cross-border supply chain.

Technology adoption in the age of pandemics

Many of these tools and platforms have existed for a few years, but the arrival of the COVID-19 pandemic has accelerated the need for their utilization.

When the pandemic hit, leaky and inflexible supply chains broke down. Many companies were left scrambling to rebuild while fighting for capacity or attempting to relocate production out of China.

Digital supply chains were able to respond to the crisis and adjust their operations more quickly and easily. Some were able to leverage their tech adoption to meet demand and even grow. The collapse of many small companies, the disruption of markets and the financial burdens that came from the early days of the pandemic gave the logistics industry a very clear message — adapt or die.

Whatever the next crisis is, companies are more likely to survive (and even flourish) if they are willing to reinforce their supply chains with technology and leave the pen and paper behind.

Source: www.sdcexec.com



CONGRATULATIONS



DR. SURESH KUMAR SHARMA

IIMM fraternity feels immensely happy and privileged to congratulate Dr. Suresh Kumar Sharma, Former National President of IIMM for getting Doctorate on “Digital Transformation of Logistics Industries - Gateway to all round growth of Economy”.

His endeavor to achieve this height at the age of around 65 is unparalleled and unmatched and inspiration for younger generation. Dr. Sharma's success is a reminder to all of us that there is no shortcut to success and determination overtakes all impediments.

Dr. Suresh Kumar Sharma is very closely associated with IIMM and with its activities. His contributions to IIMM are multi dimensional in nature. He has been mentor to some of the Branches. He has continued extended to membership development support to IIMM and for organizing Seminars, Training Programs, classroom teaching, etc. leading to spread of SCM knowledge.

We, at IIMM are very proud of him and wish him ALL THE BEST in his future endeavors and hope he will bring more laurels to IIMM.



WTO UPDATE

MEMBERS DISCUSS ECONOMIC AND TRADE IMPACT OF NATURAL DISASTERS ON SMALL ECONOMIES

The Committee on Trade and Development met on 6 July 2021 to discuss how trade policy and WTO rules can help small, vulnerable economies build resilience to natural disasters and accelerate recovery after such events.

The Food and Agriculture Organization of the United Nations (FAO) presented its latest report on the impact of natural disasters on agriculture and food security. It said the effects on agriculture have been underestimated, primarily due to the unavailability of data. The FAO emphasized that data collection needs to be strengthened at the national and international levels to enhance knowledge sharing and to support capacity development.

The International Trade Centre (ITC) stressed the need to strengthen resilience and support mitigation in small, vulnerable economies. ITC data from SME competitiveness surveys show that resilient companies were five times less likely to lay off employees during COVID-19 and more likely to maintain stable sales. It said there is a need to focus on building the resilience of smaller companies to withstand shocks and to safeguard jobs. The ITC also said its Green recovery plan is focusing on empowering small businesses to recover from the pandemic.

The United Nations Conference on Trade and Development (UNCTAD) noted that developing countries, particularly small economies in tropical areas, are the most affected by climate change. It highlighted projections indicating a high probability of droughts over the next ten years. UNCTAD stressed that if countries implement aggressive climate change mitigation, they can alleviate the frequency and intensity of such hazards.

The WTO Secretariat highlighted the WTO Natural Disasters and Trade Study, which focuses on six disaster-affected members: Fiji, Dominica, Nepal, St Lucia, Tonga and Vanuatu. The study shows that these countries are likely to be either hit by, or recovering from, a significant natural disaster in any given year. There is scope under WTO agreements, including those on agriculture and subsidies, to take measures to facilitate resilience and the entry of relief in the form of goods and services, the Secretariat said.

Members of the group of small, vulnerable economies

shared their national experiences. Ecuador highlighted vulnerabilities to its economy due to climate change and cited policies the country has implemented in response.

Keisal Peters, the Minister of State for Foreign Affairs and Trade for St Vincent and the Grenadines, said her government estimated that 15% of debt accumulated between 2010 and 2017 is directly attributable to post-disaster reconstruction and building disaster resilience. As a deliverable for the WTO's 12th Ministerial Conference (MC12) later this year, she called on members to support a ministerial decision on a work programme for small economies which highlights the needs of economies exposed to natural disasters.

Sri Lanka called for an in-depth discussion of the significant economic and trade impacts suffered by small, vulnerable economies following natural disasters and possible trade policy responses that could help countries recover and build up their resilience. Trinidad and Tobago said that being classified as a high-income country constrains its ability to access concessional financing, technical assistance and capacity building, all of which are essential tools to overcome the impact of natural disasters.

China said it sees the need to take concrete action under the WTO framework to help small economies enhance their resilience. It also encouraged more discussions on food security.

The United States said that, through USAID programmes and funding, it has committed to strengthening the resilience of exposed countries and sectors to the impact of natural disasters and climate crises. USAID has responded to 66 disasters in 49 countries, providing nearly US\$ 7.2 billion in humanitarian assistance, including more than US\$ 385 million targeted at resilience and food security activities, the US said.

The committee chair, Ambassador Muhammad MujtabaPiracha of Pakistan, indicated that the coordinator of the small, vulnerable economies group would be consulting with members to put forward a proposed ministerial decision on a work programme for review at the next dedicated session.

Source:WTO Website

● ● ●

WHAT CONDITIONS MAKE INDUSTRY 4.0 FEASIBLE?

ARNO KOCH

Many factories are not yet ready to take the leap to 4.0. But is it necessary or even wise to take that leap?

Industry 4.0 can demonstrably only work if the following conditions are met:

1. Completely reliable machines that can be changed over very quickly

Each product is made individually to customer requirements and moves itself – based on its digital twin information – through the plant from one machine to another. The machine may require a different setup between each product, so machines have to be ready instantaneously.

Measuring thousands of machines, in my experience, the vast majority of machines have a mean time between failure (MTBF) of much less than eight hours. The time-honored and proven total productive maintenance techniques, including autonomous and preventive maintenance, only become more important as equipment becomes more complex and vulnerable. Most equipment I know of can hardly be set up within single cycles and with a vertical ramp-down/ramp-up. So single-minute exchange of dies (SMED) will simply have to be a built-in feature of the process and must evolve into SCED: single cycle exchange of dies.

2. Completely reliable production processes.

In the 4.0 concept, there is absolutely no time to check products, let alone correct them. It is perfectly possible to produce zero defect, but then *all* processes must be perfectly under control.

Henry Ford already in his day saw the need to standardize to a large extent, and W. Edwards Deming taught by using statistical process control (SPC) to find and distinguish normal versus abnormal deviations. Without SPC, it is hard to tell. Where many manufacturers today are satisfied with quality figures of 95+%, the question will be whether we will maintain sufficient flow in a dream

4.0 environment with 99.99% quality.

3. Completely reliable internal processes

In addition to the production processes, all other business processes must also be reliable. In overall equipment effectiveness (OEE) measurements, time and again, the causes of machine disturbances turn out to lie somewhere in an office. My favorite method for getting administrative and supporting processes on track is Makigami process improvement.

However it is done: The shopfloor can no longer be the place where flaws from other processes need to be fixed.

4. Completely reliable supply chain

What applies to the companies' processes also applies to the processes in the supply chain. Neither the products themselves nor the moment of delivery may disrupt the value streams. That is easier said than done. From real 3.0 manufacturers we know in some cases, they know the processes up to Tier 4 just as well as their own and are confident that they are just as well-controlled. As long as buyers believe quality can be achieved through (input) controls, "reasonable doubt" should be in place.

Whenever a condition in the above four prerequisites is not being met, it will become visible in the OEE measurement (when implemented correctly). Therefore OEE is an indispensable indicator to move towards controlled processes.

5. Everything can communicate with everything

a. A not unimportant detail to get 4.0 up and running: All transport and conversion devices must be able to communicate with each other as well as with a central controller. Most of the machines I encounter in common factories are decades old and never designed to communicate with their environment (nor, for that matter, to be able to

change-over within one cycle and have a very high reliability and uptime.)

b. This communication must be fed from the digital twin. Therefore, for *every* product it must be recorded in detail without error what the product looks like, what the specifications and tolerances are, how and where it is produced etc. In my experience, the product specifications and certainly the tolerances are poorly recorded for many products. This is especially true for process parameters.

I would venture to say that these requirements would anyhow be very helpful in any production environment. In a well-organized 3.0 environment, that will certainly be the case to a large extent. When things go wrong in a 3.0 factory, the self-regulating capacity of the well-developed people who are present in the process, day in day out, keep things going and use such events to further improve the process. I see no way how that could still be the case in a 4.0 environment.

Has anyone tried it before?

Fiat, Volkswagen and most recently Tesla have tried to a certain extent. All three have given up. All three have learned that you don't 'solve' complex processes with even more complex solutions. But above all, they have learned how important the self-regulating and problem-solving abilities of people are. All three applied a high degree of automation, but the human factor was brought back into the process and they learned to experience the beauty of 3.0.

Conclusion?

There seems to be a tendency to solve problems by 'automating' problems and people away, sometimes costing billions. It makes much more sense to do it the other way around:

1. First solve the problems, get the process in order, then automate it
2. Instead of eliminating the human factor, *embed* it and use its unique features

Automation is a great solution for quantitative tasks. But when there are qualitative problems, it is much more effective to simplify things first; to know the real value streams and bring them under control instead of trying to "organize" the underlying problem with complex technology.

Doing so just makes the problem bigger.

What is ALWAYS needed?

Whatever manufacturing concept has preference, some things are always beneficial or even indispensable:

1. People who know perfectly what they are doing, why and how.

Only when people know what they are doing and why can we ensure that humans can master their technology and respond appropriately to unexpected situations, of which there always will be.

2. Deviations that are immediately visible and responded to.

Only when we know and can see that something is deviant can we react to it and possibly stop or correct it before it is too late.

3. An improvement system that eliminates root-causes.

The larger and more complex the manufacturing-process becomes, the more things can go wrong. Only when we are able to turn each mistake into an improvement can we grow.

4. Extensive standardization.

Only when we know what is the best way to do something, and ensure that it is always done that way, can processes be in control. By putting together complex products from standardized components, the complexity is much more manageable.

5. Machinery and processes are *reliable*.

The preceding points are the basis for processes and machines that are reliable. A reliable process is the cheapest, fastest, safest, most schedulable, etc.

Arno Koch has over 25 years of experience in process improvement and process control. His improvement goals are defined in terms of "halving" and "doubling." He teaches process improvement at the CETPM at a German university, is partner at OEE Coach BV and owner of Makigami BV, and has written three books on OEE and two on Monozukuri ('the art of making things').

Source: IndustryWeek

GUIDELINES ISSUED BY THE BOARD UNDER SECTION 194-Q READ WITH SECTION 206C(1H) OF THE INCOME-TAX ACT, 1961

1. Background

Vide Finance Act, 2021, a new section 194Q was inserted in the Income-tax Act 1961 ("the Act") with effect from 1st July, 2021. The section mandates deduction of tax at source by a buyer responsible for paying any sum to a resident seller for purchase of goods of the aggregate value exceeding fifty lakh rupees in any previous year, equal to 0.1% of such sum exceeding fifty lakh rupees. The tax deduction is required to be made by the buyer at the time of credit of such sum to the account of the seller or at the time of payment, whichever is earlier.

Further, sub-section (1H) to section 206C of the Act inserted with effect from 1st October, 2020 mandates that a seller receiving any consideration for sale of goods of the aggregate value exceeding fifty lakh rupees in any previous year shall collect tax from the buyer of a sum equal to 0.1% of such consideration exceeding fifty lakh rupees. The tax is required to be collected at the time of receipt of such consideration.

Both sections 194Q and 206C(1H) of the Act are applicable to the buyer and seller respectively, only if the respective turnover in the preceding financial year exceeds Rs.10 crores.

Several practical difficulties and interpretational issues related to these provisions were expressed by various stakeholders. Addressing the same, the Central Board of Direct Taxes ('the Board / CBDT'), in terms of powers conferred under sections 194Q(3) of the Act, has issued Circular No. 13 of 2021 [F. No. 370142/26/2021-TPL] dated 30th June, 2021 whereby guidelines for removing certain practical difficulties arising out of implementation of the aforementioned provisions have been provided. These guidelines have also sought to remove difficulties in implementation of the provisions of section 194Q, section 206C(1H) and section 206C(1-I) of the Act.

2. Guidelines issued: The guidelines issued are analyzed as under:

(a) Exclusion of transactions carried out through various Exchanges [section 194Q]

It has been clarified that section 194Q shall not apply to transactions in securities and commodities transacted/traded through recognised stock exchange, including those located in IFSCs and transactions in electricity, renewable energy certificates/ energy saving certificates traded through power exchanges.

VA Comments: The present guidelines excluding the above transactions from the ambit of provisions of section 194Q is analogous with the similar guidelines issued by the CBDT under section 194O and section 206C(1-I) of the Act vide Circular No.17 of 2020 dated

29.09.2020 excluding similar transactions from the applicability of section 206C(1H) of the Act. By excluding such transactions from applicability of section 194Q and section 206C(1H) of the Act, consistent approach has been adopted by the Government, thereby avoiding ambiguity or differences in both sections with respect to purchase of goods by the buyer, on the one hand, and corresponding sale by the seller, on the other.

(b) Calculation of threshold for the financial year 2021-22 : Since section 194-Q is applicable from 1st July 2021, it was not clear how the threshold of fifty lakhs rupees would be computed and whether tax is required to be deducted on the advance paid before 1st July 2021 but credited thereafter?

The aforesaid issue has been clarified in the present guidelines as under:

(i) For computation of threshold limit of Rs.50 lakhs, it is clarified that the sums paid/ credited between 1st April 2021 to 30th June 2021 shall also be considered. In other words, if the gross amount of payment or credit to seller towards purchase of goods by the buyer during 1st April to 30th June 2021 exceeds Rs.50 lakhs, the provisions of section 194Q shall be applicable on the entire amount paid/ credited by the purchaser of goods on or after 1st July 2021.

(ii) It is clarified that since TDS under section 194Q is to be deducted at the time of credit of account of seller or payment, whichever is earlier, the provisions of 194Q shall not apply on any sum credited or paid before 1st July, 2021. Simply put, if either of the two events occur prior to 1st July, 2021, then, the transaction to that extent would not be subject to the provisions of section 194Q of the Act.

VA Comments: On the second issue, one school of thought was that even in a case where payment is made prior to 1st July, 2021, but transaction of sale takes place post that date, section 194Q shall be applicable. CBDT clarification to the contrary is welcome and timely.

(c) Adjustment for GST and purchase return

(i) Whether TDS to be deducted on value including GST?

The CBDT had earlier, in the context of provisions of TDS under Chapter XVII-B of the Act, issued Circular No.23 of 2017 dated 19.07.2017 clarifying that where "the component of 'GST on services' comprised in the amount payable to a resident is indicated separately, tax shall be deducted at source under Chapter XVII-B of the Act on the amount paid or payable without including such 'GST on services' component".

Vide the present guidelines, CBDT has clarified as under:

- Where tax is deductible on credit of amount to the account of the seller, being earlier than payment, and the component of GST is indicated separately, then, tax shall be deducted under section 194Q of the Act on the amount credited without including such GST;
- Where tax is deducted on payment basis, being earlier than credit, then, tax would be required to be deducted on the whole amount. The reasoning provided is that it becomes difficult to identify such payments with GST component of the amount to be invoiced in future.

(ii) Purchase return

It is clarified that in case goods purchased and subjected to deduction of tax under section 194Q of the Act are returned and money is refunded by the seller, then, tax deducted shall be adjusted against the future purchases with the same seller. However, where goods returned by buyer (on which TDS is deducted earlier) are replaced by goods supplied by seller, then, no adjustment is required to be made.

VA Comments: Exclusion of GST for the purposes of section 194Q of the Act is a welcome clarification, which shall put to rests much debated issue as to whether or not tax is required to be deducted on gross amount (inclusive of GST) or on net amount.

Pertinently, in the context of collection of tax at source on sale of goods, the CBDT vide Circular No. 17 of 2020 dated 29.09.2020, however, took a contrary position and clarified that tax is required to be collected at source under section 206C(1H) on the amount of sale consideration including indirect taxes like GST since collection is made with reference to the receipt of amount of sale consideration.

The thinking, therefore, clearly seems to be that where deduction/ collection of TDS/ TCS is with reference to the payment/ receipt of sale consideration, then, the component of GST shall not be excluded. As a result, if the buyer fails to deduct tax under section 194Q and the transaction is subject to 206(1H) [which is on receipt basis], then, the seller would be obliged to collect TCS on the entire amount collected including the GST component, which may result in higher incidence of collection of tax at source.

As regards sales return, Circular No.17 (supra) similarly clarified that no adjustment shall be made for sales return. In the context of section 194Q, the present Circular imparts certainty to some extent by clarifying that the TDS may be adjusted against subsequent purchases. In a case, however, where there is no subsequent purchase from that seller post purchase return of transaction already subject to TDS, then, in such circumstance no relief has been given and in such cases, incidence of TDS may result in hardship to the parties.

(d) Applicability to non-resident buyer

It is clarified that the section 194Q of the Act shall not apply to a non-resident buyer, where purchase of goods from seller resident in India is not effectively connected with the permanent establishment, if any, of such non-resident in India.

VA Comments: This clarification acts as a huge relief to the non-resident purchasers since it would have, otherwise, imposed unnecessary compliance burden on such non-resident buyers, despite not having any taxable income or transaction in India except solitary purchase of goods, and any non-compliance with such provisions would have resulted in grave penal consequences.

Arguably, the above clarification shall equally apply to section 194O and shall consequently, ease the requirement of deducting tax on the non-resident e-commerce operator for facilitation of sale through e-commerce.

(e) Applicability of section 194Q/ 206C(1H) to seller whose income is exempt

The Board has clarified that the provisions of section 194Q shall not apply on purchase of goods from seller whose income is exempt under the Act (like persons exempt under section 10) or under any other Act passed by the Parliament (like RBI Act, ADB Act, etc.). Similar exemption is provided under section 206C(1H) to seller wherein sale of goods is made to buyer whose income is exempt from income tax under the Act or any other Act passed by the Parliament.

However, the above benefit is not available if only part of the income of the buyer or seller, as the case may be, is exempt from tax.

VA Comments: Though this a welcome clarification provided by the Board, it is to be seen how the compliance of said provisions would be done in absence of any mechanism/ utility in place.

Further, many irregularities are likely to sprout. As an example, payment is made to charitable trust which claims its income to be exempt under sections 11/12 of the Act but the exemption is denied by the income tax authority, which is contested before appellate forums. The question that arises, therefore, is whether in such circumstances, income of the trust can still be considered to be exempt from tax under the Act?

Suggestion, therefore, is that a utility may be created whereby the buyer is able to determine whether or not income of the seller is exempt and the transaction is not liable for deduction of TDS under section 194Q.

(f) Applicability of provisions on advance payment

The Board relying on the timing of tax incidence under section 194Q, i.e., credit or payment whichever is earlier, has clarified that the provisions of the said section shall apply to advance payment made by the buyer to the seller.

VA Comments: Though arguably, one may contend that on advance payment incidence of tax should be attracted when the advance is appropriated towards the purchase and not on mere receipt, it would be advisable to follow the above clarification issued by the Board. This may, however, prove to be a deterrent for the purchaser making advance payment to the buyer.

(g) Applicability of section 194Q to buyer (i) in the year of incorporation and (ii) if turnover from business is Rs10 crores or less?

Explanation to sub-section (1) to section 194Q of the Act defines 'buyer' as a person whose total sales, gross receipts or turnover from the business carried on by him exceed ten crore rupees during the financial year immediately preceding the financial year in which the purchase of goods is carried out.

In aforesaid context, it has been clarified that since the threshold limit is to be seen in the preceding year when the purchases are made, therefore, the said condition would not be satisfied in the year of incorporation, and accordingly, section 194Q of the Act shall not be applicable.

As regards buyer who has turnover or gross receipt exceeding Rs.10 crores but total sales or gross receipts or turnover from business is Rs.10 crore or less, it is clarified that the sales or gross receipts or turnover from **business carried on by him** must exceed Rs 10 crores and turnover or receipts from non-business activity is not to be considered for the purpose of section 194Q of the Act.

(h) Interplay of section 194-O, section 206C(1H) and section 194Q of the Act

Section 194-O of the Act provides that an e-commerce operator shall deduct tax @1% of the gross amount being paid/ payable to a resident e-commerce participant on account of sale of goods or provision of service or both, facilitated through its digital or electronic facility or platform. The said TDS is required to be deducted at the time of credit or payment, whichever is earlier. Under sub-section (3) of said section, it is provided that a transaction in respect of which tax has been deducted by the e-commerce operator under sub-section (1) or which is not liable to deduction under sub-section (2) [i.e., transaction upto threshold limit of Rs.5 lakh], then the transaction shall not be liable to tax deduction at source under any other provision of Chapter XVII of the Act.

Further, second proviso to sub-section (1H) of section 206C of the Act provides that provisions of this sub-section shall not apply, if the buyer is liable to deduct tax at source under any other provisions of this Act on the goods purchased by him from the seller and has deducted such tax. Similarly, section 194Q(5) of the Act exempts transaction(s):

(i) on which tax is deductible under any of the provisions of this Act; and

(ii) where tax is collectible under the provisions of section 206C, other than a transaction to which section 206C(1H) applies.

The sequence/ hierarchy of above sections for deduction/ collection of tax at source was in doubt and there was ambiguity regarding the application of the various sections for same kind of transaction of purchase/ sale of goods, which has, vide the present guidelines, been clarified in a simplified manner as under:

- Tax is not required to be deducted at source under section 194-Q (purchase of goods) if TDS is either deducted by the e-commerce operator on a transaction under section 194-O or the transaction is excluded under section 194O(2) of the Act [i.e.,

transaction upto threshold limit of Rs.5 lakhs].

- Exemption from collecting TCS is provided under section 206C(1H) [sale of goods] if the buyer has deducted TDS. This exemption has been extended to buyer who is e-commerce operator and the e-commerce operator has deducted tax at source on that transaction of sale of goods by seller through e-commerce operator.
- If a transaction falls within the purview of, both, section 194-O (e-commerce transactions) as well as section 194Q (purchase of goods), then tax is required to be deducted under section 194-O and not under section 194Q of the Act.
- Similarly, if a transaction is within the purview of, both, section 194-O of the Act as well as sub-section (1H) of section 206C, then TDS is to be deducted under section 194-O of the Act.

It is however, clarified that in case of e-commerce operator, where such e-commerce operator is required to deduct TDS under section 194-O thereby precluding the seller from collecting tax under section 206C(1H), then, too, the primary responsibility rests on the e-commerce operator to deduct tax under section 194-O and that responsibility cannot be condoned notwithstanding that the seller has collected the tax under sub-section (1H) of section 206C of the Act.

- Where a transaction is subject to, both, section 194-Q and section 206C(1H), then, tax is required to be deducted under section 194-Q of the Act. However, if, for any reason, tax has been collected by the seller under sub-section (1H) of section 206C, before the buyer could deduct tax under section 194-Q on the same transaction, then, such transaction would not be subjected to tax deduction under section 194Q of the Act again by the buyer.

VA Comments: To put it simply, the sequence of above sections is as under:

1. Section 194-O: Prime responsibility of e-commerce operator to deduct TDS; not condonable even if TCS collected by the seller;
2. Section 194-Q: Responsibility of the purchaser to deduct TDS on purchases. However, if transaction is, for some reason, earlier subjected to TCS under section 206C(1H), then, purchaser may not deduct TDS under section 194-Q.
3. Section 206C(1H): Responsibility of seller to collect TCS on sales.

Practically, in case of regular transactions, coordination amongst buyer and seller and compliance in terms of the aforesaid sequence may be a challenge.

DISCLAIMER : The material contained in this publication is solely for information and general guidance and not for advertising or soliciting. The information provided does not constitute professional advice that may be required before acting on any matter. While every care has been taken in the preparation of this publication to ensure its accuracy, Vaish Associates Advocates neither assumes responsibility for any errors, which despite all precautions, may be found herein nor accepts any liability, and disclaims all responsibility, for any kind of loss or damage of any kind arising on account of anyone acting/ refraining to act by placing reliance upon the information contained in this publication.

Source : vaishlaw.com

● ● ●

DECARBONISING TRANSPORT: REDEFINING MOBILITY POLICIES IN INDIA

SIDDHARTH SINHA AND MADHAV SHARMA

The Covid-19 pandemic has posed a number of challenges for the transport sector, one of which is the shift of citizens from public to private and personal modes of transport. Public transit and shared mobility services have witnessed an unprecedented impact on account of pandemic control measures and public hesitancy arising out of fear of contracting the virus. India's transport sector, which caters to over a billion people, is constantly expanding due to rapid urbanisation, contributing to increased pollution and congestion. This may worsen significantly as people shift away from public transport. This crisis, however, also presents us with the unique opportunity to substitute the increased demand and control changing transport-uptake patterns with clean, connected and cutting-edge transport systems. This requires a fresh approach grounded in leveraging data intelligently to push forward with our mobility policies and emissions targets.

As an emerging market, India is one of the largest car and two-wheeler manufacturers in the world. It also has the fourth-largest railway network and the fastest-growing aviation market. Our motor vehicle fleet is growing rapidly — with the vehicles plying on the road expected to almost double to over 200 million by 2030. Interestingly, the share of non-motorised transport in many Indian cities is high compared to similarly sized cities globally. It is reported that in Indian cities with populations of over 1 million, non-motorised transport accounted for more than 25 per cent of passenger trips, compared with approximately 14 per cent in London. The transport sector of India is the third most greenhouse gas (GHG) emitting sector and accounted for 14 per cent of our energy-related CO₂ emissions. These emissions have more than tripled since 1990, and with India's urban population expected to double by 2050, they are likely to increase further.

The government has already taken a number of measures in this direction — the FAME II scheme (the subsidy as part of which was recently increased, further bringing down the cost differential between EVs and ICE vehicles) is already providing an impetus to clean mobility while the recently introduced Production Linked Incentive (PLI) scheme for Advanced Cell Chemistry (ACC) battery storage will further accelerate EV adoption. The Railways has pledged to become a net-zero emitter by 2030 and the operationalisation of dedicated freight corridors will cut emissions by almost 450 million tonnes in the first 30 years. Metro rails are rapidly expanding across the country as is the concept of high speed regional mobility — the Delhi-Meerut Regional Rapid Transit System and the Kerala Semi-High Speed Rail are both transformational projects, which will provide quick and seamless inter-city linkage and take millions of vehicles off the road. Ropeways, for Overhead Mass Rapid Transit (OMRTS) along the lines of the highly successful La Paz Ropeway in Bolivia, are already being explored in Northern and Northeastern states.

India is one of the few countries on track to achieve its Nationally Determined Contributions under the Paris Agreement, having already achieved 21 per cent of its pledge to reduce emissions intensity of GDP by 33-35 per cent by 2030. In fact, it is just two per cent short of the 2030 target of 40 per cent of installed non-fossil fuel electricity capacity. We must continue to bolster our efforts in this direction because the effects are not just limited to reduction of our oil import bills and ushering cleaner mobility, but also the emergence of newer business models, advanced research, greater employment opportunities and an overall multiplier effect

on the economy. In today's increasingly data-driven world, this would require sustainable and innovative policies backed by data and advanced modelling capabilities. In India, while we have abundance of data, we lack an integrated approach to use it in a meaningful way. Today, new data collection techniques and modelling exercises have become available that offer larger sample sizes, cover a wide geography and give real-time insights. The adoption and advancement of GPS, IoTs, Bluetooth, NFC and WiFi, Smart Cards and Smartphone apps have become a disruptive form of data collection.

Going forward, a scenario-based modelling approach for formulating transport policies would be ideal. Through such modelling, we can assess how GHG emissions reductions could be achieved through a feasible set of scenarios rather than apply a one-size-fits-all policy decision. We need to evaluate our current-ambition scenario which shows what the future would be like should we continue with our current policies, and also simulate different high-ambition scenarios which show how interventions which deviate from the status quo can lead to further GHG reductions in the years to come. One such modelling tool available is the Life Cycle Assessment (LCA) approach, which allows us to assess the components of the transport ecosystem throughout their useful life, from cradle to grave, and assess the impact on the environment at every stage. Often well-intended policy decisions, aimed at controlling emissions may actually result in a situation where emissions in another stage of the product life cycle increase, a concept known as burden shifting. However, LCA avoids this issue by virtue of being applicable across the product lifecycle.

Using such tools and scenario building exercises, we can develop a framework which not only gives policymakers a wealth of data, but also allows for different policy options to be tested and their future impact predicted and quantified, thus allowing for the optimal one to be chosen. In India, two mammoth projects aimed at developing such modelling tools and identifying pathways towards decarbonisation have already kicked off last year, driven by a consortium of the International Transport Forum, GIZ, REN21, WRI, ICCT and Agora Verkehrswende, and is being coordinated nationally by NITI Aayog. In addition to the modelling exercises for which data gathering from select smart cities has already taken off, a first-of-its kind digital library on e-mobility has been launched which has brought together all research on clean mobility on a single platform. Capacity building workshops and the establishment of a national mobility stakeholder platform are also in the pipeline.

As a developing country, it is important for us to balance out the aspirations of people and economic growth with environment and sustainability. In this context, our ability to break the data silos and leverage the massive amount of available data in a meaningful manner is of pivotal importance. It would enable us to design policies that are firmly grounded in data and which are likely to be highly efficient and impactful across the entire transport ecosystem in the country, paving the way for a paradigm shift in the future of mobility in India.

*Siddharth Sinha is public policy consultant and Madhav Sharma is Young Professional, NITI Aayog. Views expressed are personal.

*This article was published in the **Indian Express**
Source: NITI Aayog

● ● ●

INITIATIVES UNDER “MAKE IN INDIA” AND “STARTUP” PROGRAMMES; MAKE IN INDIA INITIATIVE FOCUSES ON 27 SECTORS UNDER MAKE IN INDIA 2.0. ‘STARTUP INDIA’ INITIATIVE GENERATES MORE THAN 26000 EMPLOYMENT IN TAMIL NADU IN THREE YEARS

‘Make in India’ is an initiative which was launched on 25th September, 2014, to facilitate investment, foster innovation, building best in class infrastructure, and making India a hub for manufacturing, design, and innovation. The development of a robust manufacturing sector continues to be a key priority of the Indian Government. It was one of the first ‘Vocal for Local’ initiatives that exposed India’s manufacturing domain to the world. The sector has the potential to not only take economic growth to a higher trajectory but also to provide employment to a large pool of our young labour force.

Make in India initiative has made significant achievements and presently focuses on 27 sectors under Make in India 2.0. Department for Promotion of Industry and Internal Trade is coordinating action plans for manufacturing sectors, while Department of Commerce is coordinating service sectors.

The Government of India is making continuous efforts under Investment Facilitation for implementation of Make in India action plans to identify potential investors. Support is being provided to Indian Missions abroad and State Governments for organising events, summits, road-shows and other promotional activities to attract investment in the country under the Make in India banner. Investment Outreach activities are being carried out for enhancing International co-operation for promoting FDI and improve Ease of Doing Business in the country.

India has registered its highest ever annual FDI Inflow of US \$81.72 billion (provisional figure) during the last financial year 2020-21 as compared to US \$ 45.15 billion in 2014-2015. In the last seven financial years (2014-20), India has received FDI inflow worth US\$ 440.01 billion which is 58 percent of the FDI reported in the last 21 years (US\$ 763.58 billion).

Steps taken to improve Ease of Doing Business include simplification and rationalisation of existing processes. As a result of the measures taken to improve the country’s investment climate, India jumped to 63rd place in World Bank’s Ease of Doing Business ranking as per World Bank’s Doing Business Report (DBR) 2020. This is driven by reforms in the areas of Starting a Business, Paying Taxes, Trading Across Borders, and Resolving

Insolvency.

Recently, Government has taken various steps in addition to ongoing schemes to boost domestic and foreign investments in India. These include the National Infrastructure Pipeline, Reduction in Corporate Tax, easing liquidity problems of NBFCs and Banks, policy measures to boost domestic manufacturing. Government of India has also promoted domestic manufacturing of goods through public procurement orders, Phased Manufacturing Programme (PMP), Schemes for Production Linked Incentives of various Ministries.

Further, with a view to support, facilitate and provide investor friendly ecosystem to investors investing in India, the Union Cabinet on 03rd June, 2020 has approved constitution of an Empowered Group of Secretaries (EGoS), and also Project Development Cells (PDCs) in all concerned Ministries/ Departments to fast-track investments in coordination between the Central Government and State Governments, and thereby grow the pipeline of investible projects in India to increase domestic investments and FDI inflow.

Startup India: Startup India is a flagship initiative of the Government of India, intended to build a strong eco-system for nurturing innovation and Startups in the country that will drive sustainable economic growth and generate large scale employment opportunities. Salient features of the Startup India Initiative are at Annexure-I.

The activities under the Make in India initiative are being undertaken by several Central Government Ministries/ Departments and various State Governments. There is no fund allocation from DPIIT to States/ UTs under ‘Make in India’ initiative. Further, Ministries formulate action plans, programmes, schemes and policies for the sectors being dealt by them. This Department does not maintain information on such formulations by the line Ministries.

With respect to Startup India initiative also, there is no direct fund allocation from DPIIT to States/UTs. However, Government of India has established a Fund of Funds for Startups (FFS) with corpus of Rs. 10,000 crores, to meet the funding needs of startups. DPIIT is the monitoring agency and Small Industries

Development Bank of India (SIDBI) is the operating agency for FFS. The total corpus of Rs. 10,000 crores is envisaged to be provided over the 14th and 15th Finance Commission cycles based on progress of the scheme and availability of funds.

The initiatives under 'Make in India' are targeted towards employment creation and skill development of youth in both urban and rural areas. The data for employment generated under 'Make in India' initiative is not centrally compiled.

Under the 'Startup India' initiative, as on 07.07.2021, a total of 26,327 employment has been reported by DPIIT recognized startups from Tamil Nadu in the last three years. The year-wise details of employment generated by startups from Tamil Nadu is as under:

Year	Jobs reported by recognized startups in Tamil Nadu (as on 07.07.2021)
2018	4504
2019	8213
2020	8628
2021	4982
Total	26,327

ANNEXURE – I

Details of achievements under Startup India Initiative

1. Intellectual Property Rights (IPR) benefits:

- I. Startups are eligible for 80% rebate in patent filing fees and 50% rebate in trademark filing fees.

Additionally, Startups are also provided the facility of expedited examination of patent applications to reduce time taken in granting patents. 510 patent facilitators and 392 trademark facilitators have been empanelled, as of March 2021, under this scheme to provide free-of-charge services to Startups.

- II. As of March 2021, 5544 patent applications have been filed . Over 70% CAGR over the past 4 years of the total patents filed:

577 Granted

639 Disposal other than grant 4328 Under Examination

- III. 1316 expedited examination for patent applications filed by Startups; of these FER (First Examination Report) issues for 1233 applications and 561 Patents granted

- IV. 14632 Trademark applications have been filed out of 7013 trademarks registered, 1887 accepted, 499 Refused/Withdrawn/Abandoned 5233 under examination

- V. Patents have been granted as fast as 81 days (2018).

2. Easing Public Procurement

- I. The requirement of prior turnover and prior experience has been relaxed to encourage startups to participate in tenders. Further, startups have been exempted from the requirement of earnest money deposit.

- II. 'GeM Startup Runway' has been launched for startups to sell products and services to Government. As of June 2021, 10,154 startups have registered on GeM portal and 76,564 orders have been placed to startups. The value of orders served by startups has been to the tune of around INR 3,481 Crores.

- III. Additionally, Startups can now register and participate in all public orders on Central Public Procurement Portal and get exemptions on prior experience, prior turnover and earnest money deposit requirements.

- IV. GeM has relaxed the requirement of approved Trademark certificate for DPIIT Recognized Startups . An application for trademark will be sufficient.

3. Self-Certification under Labour and Environmental laws

- I. Startups recognised under Startup India initiative can self-certify their compliance against the 6 labour laws and 3 environmental laws.

- II. 27 states and UTs have implemented the process of self- certification to startups under 6 labour laws. 9 States (Haryana, Madhya Pradesh, Maharashtra, Rajasthan, Gujarat, Uttar Pradesh, Punjab, Uttarakhand, and Delhi) have integrated their portals with Shram Suvidha Portal. Overall, 169 DPIIT recognized Startups have availed the benefits of self-certification.

4. Tax Exemption to Startups for 3 years

- I. The provisions of section 80-IAC of the Income Tax Act provide for a deduction of an amount equal to 100% of the profits and gains derived from an eligible business by an eligible start-up for 3 consecutive assessment years out of 7 years, at the option of the assessee, subject to certain conditions. The Finance Act, 2020 provides for an amendment to section 80-IAC of the Income

Tax Act so as to provide that the deduction under the said section 80-IAC shall be available to an eligible start-up for a period of 3 consecutive assessment years out of 10 years beginning from the year in which it is incorporated.

- II. To avail these benefits, a Startup must get a Certificate of Eligibility from the Inter-Ministerial Board (IMB). 387 startups have been granted

5. Tax Exemption on Investments above Fair Market Value
 - I. DPIIT recognized startups are exempt from tax under Section 56(2)(viib) of the Income Tax Act when such a Startup receives any consideration for issue of shares which exceeds the Fair Market Value of such shares. The startup has to file a duly signed declaration in Form 2 to DPIIT {as per notification G.S.R. 127 (E)} to claim the exemption from the provisions of Section 56(2) (viib) of the Income Tax Act. As of 12th July 2021, with regard to declarations received from entities, furnished in Form 2, intimation regarding receipt of declaration in Form 2 has been mailed in the cases of 4,372 entities.
6. Faster Exit for Startups

Ministry of Corporate Affairs has notified Startups as “Fast track firms” enabling them to wind up operations within 90 days vis-a-vis 180 days for other companies.
7. Fund of Funds for Startups
 - I. Fund of Funds for Startups (FFS) with a total corpus of Rs 10,000 crore was established with contribution spread over the 14th and 15th Finance Commission cycle based on progress of implementation. Startup Fund of Funds is operational and is managed by SIDBI.
 - II. As of 02nd June 2021, SIDBI has committed Rs. 5409.45 Cr to 71 SEBI registered Alternative Investment Funds (AIFs). These funds have a target corpus fund of Rs. 36,790 Cr. Rs. 1,541.29 Cr. have been drawn from the FFS and Rs. 5,811 Cr. have been invested into 443 startups.”
8. Startup India Seed Fund Scheme
 - I. It was launched by the Hon’ble Prime Minister on 16th January, 2021 at Startup India International Summit: Prarambh. The Scheme aims to provide financial assistance to startups for proof of concept, prototype development, product trials, market entry and commercialization. Rs. 945 Crore corpus will be divided over the next 4 years for providing seed funding to eligible startups through eligible incubators across India. The scheme is expected to support about 3600 startups.
 - II. An online portal was launched by Hon’ble CIM on 19th April 2021. 8 incubators have been selected, 23 incubator applications have been received and ~ 190 applications are in draft. The Experts Advisory Committee (EAC) has selected 8 incubator for providing financial assistance of Rs 28 crore to 8 incubators.
9. 47 regulatory reforms have been undertaken since January 2016 for enabling small businesses or Startups across the country.

10. National Startup Awards

- I. The Department for Promotion of Industry and Internal Trade (DPIIT) conceived the National Startup Awards to recognize and reward outstanding Startups and ecosystem enablers that are building innovative products or solutions and scalable enterprises, with high potential of employment generation or wealth creation, demonstrating measurable social impact.
- II. The applications for the ‘National Startup Awards 2020’ were hosted on the Startup India portal – www.startupindia.gov.in – through which a total of 1,641 applications were received from Startups across 23 States and 4 Union Territories. 41 ecosystem enablers (incubators and accelerators) also participated in the Awards.
- III. Handholding Support: DPIIT also embarked on a new journey with all of the 192 NSA finalists (including the winners), handholding them reach their next stage of growth. As committed during NSA felicitation ceremony, DPIIT is supporting the startups across 8 9 key tracks viz. Investor Connect, Mentorship, Corporate Connect, Government Connect, International Market Access, Regulatory Support, Benefits under Startup India initiative, and Startup India Showcase and Startup India Champions on Doordarshan.
- IV. National Startup Awards 2021 has been launched. Acknowledging the efforts, initiatives and resilience demonstrated by the startups over the period of unprecedented challenges during the pandemic, additional categories have been introduced to NSA 2021. It also aims to recognise innovations focussed towards indigenisation of key products essential for realisation of an Aatmanirbhar Bharat.
- V. The awards for startups will be given in 49 areas classified into 15 broad sectors. The 15 sectors are Agriculture, Animal Husbandry, Drinking Water, Education and Skill Development, Energy, Enterprise Systems, Environment, FinTech, Food Processing, Health and Wellness, Industry 4.0, Security, Space, Transport and Travel. In addition, there are six special awards for startups from educational institutions, making impact in rural areas, women entrepreneurs, potential for import substitution, innovation for combatting COVID-19 and content delivery in Indic languages. It will also reward exceptional incubator and accelerator as key building blocks of a robust startup ecosystem.
- VI. The applications for the ‘National Startup Awards 2021’ were hosted on the Startup India portal – www.startupindia.gov.in – through which a total of 2,177 applications were received from Startups across 30 States and UTs. 59 ecosystem enablers (incubators and accelerators) have also participated in the Awards. The evaluation of applications is underway.

11. Awards for Winners

I. Startups

INR 5 lakh to the winning startup in each of the 49 Categories

Opportunity to pitch in front of relevant line-ministry/ department/ corporates to the winner and two runner ups

Priority for participation in national and international events

II. Ecosystem Enablers

INR 15 Lakh to one winning incubator and one accelerator each

12. Startup India Champions on Doordarshan

I. Hon'ble Minister of Finance in her Union Budget 2019-20 speech on 5th July 2019 proposed that the government would start a television programme within the Doordarshan (DD) bouquet of channels exclusively for startups.

II. The proposed programme focuses on three key objectives showcasing the achievements, progress and innovation strength of Indian startups, matchmaking and helping connect startups to investors by providing them necessary visibility and discussing and solving the current issues that are being faced by the startups in the country.

III. The program started in January, 2021 and has had 12 episodes till now covering various industries such as energy, tourism, cyber security, urban services etc.

13. Startup India Showcase

Startup India Showcase is an online discovery platform for the most promising startups of the country chosen through various DPIIT and Startup India programs exhibited in a form of virtual profiles. The startups showcased on the platform have distinctly emerged as the best in their fields. These innovations have been handpicked by experts and have gone through multiple rounds of screening and evaluation. These innovations span across various cutting-edge sectors such as Fintech, Enterprise Tech, Social Impact, HealthTech, EdTech, among others. These startups are solving critical problems and have shown exceptional innovation in their respective sectors. Ecosystem stakeholders have nurtured and supported these startups, thereby validating their presence on this platform.

14. Startup India Yatra

DPIIT has also made efforts to engage with the Startup ecosystem through extensive outreach via bootcamps, social media, print and digital

platforms. The Startup India Yatra is an initiative that travels to Tier 2 and Tier 3 cities of India to search for entrepreneurial talent and help develop Startup ecosystem. Day long bootcamps were conducted which included awareness workshops, idea validation and pitching sessions. Startup Yatra has been conducted across 23 States in 236 districts impacting 78346 aspiring entrepreneurs. A total of 1,424 incubation offers have been given to the startups as a result of this initiative.

15. Recognition

There has been an increase in the number of DPIIT recognized startups in the recent years. The increasing trend can be seen from the below breakup:

Calendar Year	Recognized Startups
2016	504
2017	5420
2018	8946
2019	11683
2020	14778
2021*	11272

(*data till 15th July, 2021)

16. Startup India Portal

I. Startup India provides free resources to startups to help them scale faster, better, and stronger. The portal acts as one stop platform for the stakeholders of startup ecosystem with aspiring entrepreneurs, startups, corporates, accelerators, incubators, government departments having profile on the platform.

II. 4,95,396 users have registered on the website, as on 13th July, 2021.

III. More than 446 Innovation Hunts and programs have been hosted on the Startup India portal by various government departments and corporates.

17. Learning & Development Program

i. To guide budding entrepreneurs through the journey of their startup venture, a free 4-week program is offered on the key areas of starting up by more than 40 top founders of India. Upon completion of the course, an acknowledgement certificate for the learnings in the program is also provided.

ii. The Learning and Development course has been accessed by 3,14,156 users as on 22nd February, 2021.

This information was given by the Minister of State in the Ministry of Commerce and Industry, Shri Som Parkash, in a written reply in the Rajya Sabha today.

Source : PIB



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 patient-friendly.

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 non-invasively 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 non-invasive, 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

(DISCLAIMER: The views expressed are solely of the author and ETHealthworld.com does not necessarily subscribe to it. ETHealthworld.com shall not be responsible for any damage caused to any person/organisation directly or indirectly).

Source: ETHealthworld.com

●●●

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 : iimnhq55@gmail.com, members@iimm.co.in E-mail Edu, Wing : iimmedu@iimm.co.in, Website : www.iimm.org

AHMEDABAD BRANCH

Indian Institute of Materials Management
C/o SaRaa Group of Companies
406, Kalasagar Shopping Hub,
Opp. Saibaba Temple, Near Sun N
Step Club, Sattadhar Cross Road,
Ghatodia, Ahmedabad-380061, Gujarat
Cell: 91-9909996711
iimmahmedabad@gmail.com

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
C/o. Training & Placement Cell
GF-19, JNEC Campus, CIDCO, N-6
Aurangabad - 431001, Ph : 0240-2473339
E-mail : iimmau@rediffmail.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
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

BHOPAL BRANCH

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

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
Room No. B-237, Purchase Dept.,
Ispat Bhawan, Bokaro Steel City - 827001
Ph.: 06542-240263/280768
E-mail : iimmbokarobranch@gmail.com

BURNPUR BRANCH

Indian Institute of Materials Management
Matts. Dept. New Matts. Bldg.
IISCO, Burnpur Works
Burnpur - 713325 (West Bengal)
Tel: 0341-2240523/09434777116

CHANDIGARH BRANCH

Indian Institute of Materials Management
SCO 19-B, Swatik Vihar, Mansa Devi
Complex, Sector - 5, Panchkula - 134114
Ph. : 0172-2556646/4654205
E-mail : iimchandigarh2@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
iimchennai@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
S-6 & S7, 2nd Floor, Vasco Citicentre
Opp: Canara Bank, Swantantra Path
Vasco-da-Gama, Goa - 403802

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

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) Tel # 04344-240448
E-mail : iimmhosur1@gmail.com

HUBLI BRANCH

Indian Institute of Materials Management
Karnataka Chamber of Commerce of
Industry Building, 1st Floor, Jayachamaraj
Nagar, Nr. Nehru Ground, Hubli - 580020
Tel: 0836-2264699/09972703336

HYDERABAD BRANCH

Indian Institute of Materials Management
4-8-68/A/21, G.D Enclave, 3rd Floor, Rang
Mahal Road, Putli Bowl, KOTI, Hyderabad-
500095. Email: iimm.hyd1719@gmail.com,
TEL: 040-29558952, Mob.: 9866246796

INDORE BRANCH

Indian Institute of Materials Management
03, Rajmahal Colony, Ext Manik Bag Road,
Indore - 452007 (M.P)

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 Centrigre for
Excellence Jubilee Road,
Jamshedpur - 831001
Ph.: 0657-2224670/2223530
E-mail : iimm_jsr@yahoo.co.in

JAMNAGAR BRANCH

Indian Institute of Materials Management
C/o. Mr. Jayesh Joshi
Riddhi Engineering Works
111, Madhav Complex,
Opp: DKV Collage, Jamnagar - 361008
0268-2750171 / 9824263869
riddhieng@yahoo.com

KANPUR BRANCH

Indian Institute of Materials Management
C/o. IGM Computer Academy
Mallick Complex, Nr. Rama Devi
Chauraha, G T Road, Kanpur - 208007
Ph.: 0512-2401291
iimmkanpurbranch@gmail.com

K G F BRANCH

Indian Institute of Materials Management

KOLKATA BRANCH

Indian Institute of Materials Management
8/B, Short Street, Kolkata - 700017
Ph.: 033-22876971/22834963
E-mail : iimmcalt17@gmail.com

LUCKNOW BRANCH

Mr. P.K.Bajpai
Indian Institute of Materials Management
86/106, Kurmi Tola, Maqboolganj,
Lai 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 : iimmludhr@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 : iimmbomb@gmail.com

MUNDRA BRANCH

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

MYSORE BRANCH

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

MANGALORE BRANCH

Indian Institute of Materials Management
C/o. B Sandeep Naik, GM (Matts.)
MRPL, Materials Dept., PO: Kuthethur
Via: Katipalla, Mangalore - 575030. DK
Tel # 0824-2882203
Email: bsnaik@mrpl.co.in

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
Qtr. # C-352, Nalco Township, Nalco Nagar
- 759145 Dist: Angul, Orissa
Cell: 09437081126
Email: snbghar@nalcoindia.co.in

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 DELHI BRANCH

Indian Institute of Materials Management
U-135, Vikash Marg, Shakrapur
Near Laxmi Nagar Metro Stn, Delhi - 110092
011-41354969 / 9818664267
E-mail : iimm1delhi@gmail.com

PUNE BRANCH

Indian Institute of Materials Management
Pratibha Towers, Plot # 22, Old Pune
Mumbai Road, CTS # 15/2, Above TVS
Showroom, Wakdevadi, 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.: 0651-2360716/2360198
E-mail : rajesh0021@yahoo.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

SURAT BRANCH

Indian Institute of Materials Management
C/o. Mr. Dilip Dhabarde, Hony Secy,
Manager Matts, Krishak Bharati Co Ltd
PO: Kribhaco Nagar, Nr. Kavas Village
Suresh-394515, Tel: 0261-2802682
E-mail : dilipdhabarde@kribhaco.net

TRIVANDRUM BRANCH

Indian Institute of Materials Management
TC-9/1447, 2nd Floor, Future House
Temple Road, Sasthamangalam
Thiruvananthapuram - 695010
Ph. : 0471-2724952
E-mail : iimmtvpm@gmail.com

UDAIPUR BRANCH

Indian Institute of Materials Management
2nd Floor, Above Manohar Furniture
Ashwini Marg, Udaipur - 313001
Ph.: 0294-2411969/2421530
E-mail : iimmudpr@sancharnet.in
iimmudpr@gmail.com

VADODARA BRANCH

Indian Institute of Materials Management
2nd Floor, Vishal Chambers, 34, Vishwas
Colony, B/h Alkapuri Shopping Centre,
Alkapuri, Vadodara - 390007
Ph.:0265-2359060/2353410/M: 7043959600
E-mail : iimmbvd@yahoo.co.in,
iimmvadodara@gmail.com,
iimmbaroda@gmail.com,
www.iimmvadodara.org

VAPI BRANCH

Indian Institute of Materials Management
301, Fortune Mall, Above Vishal Mega Mart,
VIA Road, GIDC, Vapi - 396195
Ph.: 09825119364 / 08758294011
E-mail : iimmedu.vapi@gmail.com

VISAKHAPATNAM BRANCH

Indian Institute of Materials Management
C/o. A V Rajendra Kumar
Droo No. 39-8-34/4 & 5, Sector - 8,
Muralinagar, Visakhapatnam - 530007
Ph.: 0891-2704757 / 9701347694
E-mail : iimmvizag@gmail.com

V U NAGAR BRANCH

Indian Institute of Materials Management
Champs Engineering, 1-52, GIDC Estate
Vithal Udyognagar - 388121
Tel: 02692-230440/ 09825028050
Email: harshad.champs@gmail.com



भारतीय सामग्री प्रबंधन संस्थान INDIAN INSTITUTE OF MATERIALS MANAGEMENT

IIMM is an Apex body of Professionals of Purchasing & Supply Chain Management existing for last 5 decades.

IIMM
at a glance!

50 Branches PAN India, 10000 Committed Purchasing and Supply Chain Professionals moving wheels of Industry round the clock. Partners in India's Progress.

Explore a career in Management of Purchasing, Warehousing, Supply Chain, Logistics & Materials Management

ADMISSION OPEN 2021 - 2022

AICTE APPROVED

Post Graduate Diploma in Materials Management - (2 years)
Post Graduate Diploma in Supply Chain Management & Logistics (2years)

**Entrance Test/Personal Interview for
Admission in July 2021 Session -
25th July and 8th August 2021**

PROSPECTUS CUM ADMISSION FORM CAN BE HAD FROM NHQ, IIMM BRANCHES OR DOWNLOAD FROM WEBSITE

Cost of Prospectus: ₹500 by Cash & ₹600 by Post/Downloaded Forms

ALWAR 09731245655 AHMEDABAD 09374012684 AURANGABAD 09423455983 BANGALORE 09900862486
BHARUCH 09998975891 BHILAI 09407984081 BHOPAL 08085856437 BILASPUR 09425531806 BOKARO 08986873175
BURNPUR 09434776390 CHANDIGARH 09815566664 CHENNAI 09382697668 COCHIN 09400261874
DEHRADUN 09410397734 DHANBAD 09470595250 GANDHIDHAM 07046737857 GOA 09423007106 GREATER NOIDA 09818464359
HARIDWAR 08126111611 HOSUR 09448018407 HUBLI 09482779440 HYDERABAD 09866246796 INDORE 09826625417
JAIPUR 09001893395 JAMSHEDPUR 09798171971 JAMNAGAR 09824263869 KANPUR 09838624848 KGF 09880994684
KOLKATA 09830952363 LUCKNOW 09415752999 LUDHIANA 09815549987 MUMBAI 09820393639 MUNDRA 09687660068
MYSORE 09342112303 NAGPUR 09423074072 NALCONAGAR 09437081126 NASIK 09850730029 NEW DELHI 09810830427
PUNE 07875607146 RAEBARELI 09451077744 RANCHI 08987788599 ROURKELA 08260711943 TRIVANDRUM 08086011015
UDAIPUR 09829041733 VADODARA 07043 959060 VAPI 08758294011 VISAKHAPATNAM 07093802468 V.V. NAGAR 09825028050

bit.ly/iimm_adm

www.iimm.org

iimmedu@iimm.co.in

IIMM - National Headquarters (Education Wing)
CBD Belapur, Navi Mumbai-400614

022-27571022