

MATERIALS MANAGEMENT REVIEW



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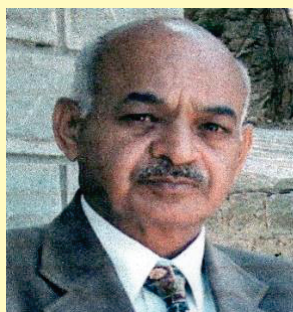
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September 2020

Key Principles of National Education Policy, 2020

Continuous Review - build on sustained research
and regular assessment by educational experts





Tribute

Late Prof. (Dr.) Anil Kumar Saihjpai (02/01/1950 — 04/09/2020)

THE OLD SAY: “FROM OUR ANCESTORS COMES OUR NAME; FROM OUR VIRTUES COMES OUR HONOUR”, very appropriately applies to Life and achievements of Prof. (Dr.) Anil Kumar Saihjpai. For a Karmayogi Vidyasagar and Scholar, we don't use the term OBITUARY but TRIBUTE as the Cherished remembrance of the BHISHMA PITAMAH of the Management Education remains evergreen in the Hearts and minds of thousands of students, whom Dr. Saihjpai has groomed throughout his life. Dr. Saihjpai would be equally remembered by Scores of Academic Organisations for which he contributed his best to gain Premiere Ranking in delivering Quality Management Education – Indian Institute of Materials Management is one such Institute.

IIMM family is sad to place on record, the sudden passing away of Dr. A K Saihjpai at Panchkula (Chandigarh TRICITY) after a brief illness on Friday, 04th September 2020.

IIMM Family all over India convey our heartfelt condolences to the bereaved family and share their grief – May the departed Soul Rest in Peace in the Heaven's Choicest Graden! OM SHANTI !

Dr. Saihjpai, at the time of demise was actively playing his role for Promoting IIMM Academic Programs all over India as Co-Chairman Board of Studies. His Association with IIMM dates back to mid-80s, as life member of IIMM Chandigarh Branch, since then dedicatedly holding the position of Director Education till Last. Equally active at Branch and National Level – Branch Chairman (2009-11), National Councilor for a number of Years and Vice President North. IIMM Best Faculty Award Winner in 2000.

M.Com and Ph.D (Financial Management), Diploma in Taxation Law, Distinguished Alumnus of Punjab University, his teaching career commenced in 1971 and joined Punjab University in 1975 and retired as Founder Director of University Institute of Management Studies in 2010. Active in various spheres of Punjab University, Dr. Saihjpai was Member Senate & Finance and Board of Finance. Dean Faculty of Commerce and Business Management; Director Industry – Institute Partnership Program; Advisor Placement Cell; Specialist in Distance Learning – HOD Commerce, University School of Open Learning, Coordinator of IGNOU at Punjab University.

Dr. Saihjpai published sixteen well acclaimed Research Papers on Commerce & Management and Guided 30 M.Phil and Ph.D Research Scholars.

Not to Take Formal Retirement Lying Down – Dr. Saihjpai believed in sharing and caring and giving it back to society. Besides IIMM, Hon'ble Director – Samkalp , Preparing youth for Civil Services Exams. Founder Vice Chancellor of Baddi University, Director-General Outreach, Rayatbakra Group, Advisor – Punjab Technical University and quite a few more Institute and Universities.

Nominated by SEBI as Director (Public Interest) of Ludhiana Stock Exchange and Director – Central Board, State Bank of Patiala for 3 years before it merged with State Bank of India. Ever Smiling and Cool, Friend of All, Guide and Excellent Teacher, TRUE VIDYASAGAR – we at IIMM will miss you but always cherish your association, Prof. (Dr.) A K Saihjpai !!

From the Desk of The National President



Dear Members,

Greeting from National President!!

As we have entered into the festive season in India, the new normal caused by Pandemic is all the more hurting us. We could neither witness the grand Independence day celebration which is held in our national capital and every part of the country, neither could we enjoy the massive Ganesh Utsav which is held in several parts of the Country. The Janmashtami celebration too was modest. As we are slowly approaching Navratri, Dussera, Ed-A-Milad, Diwali, everyone is hopeful that there will be some respite from COVID-19. However with daily cases spiking up it seems hardly there will be any relaxation. Few vaccines are in the final phase of clinical trial but by every indicator, the vaccines will be launched by 1st Quarter of Calendar year 2021. Hence we all should continue to be extremely cautious regarding our health and continue to maintain social distancing, practice respiratory hygiene, frequently washing our hand with soap, use mask in public places and keep our surrounding properly sanitized.

COVID time is a blessing in disguise as far as distance education is concerned. With social distancing becoming a norm of the day, most of the knowledge sharing is happening in online platform. IIMM too has stepped up the efforts to service our students through online webinars, holding online classes for our PGDMM and PGDSCM&L students. Over 75 online classes covering various subjects by experience faculties were conducted during last 2-3 months which was well appreciated by all. This was one major activity which was carried out by IIMM education wing under guidance of our Co-Chairmen BOS, Dr. M.K.Bhardwaj and Prof. A.K.Saijpal.

We are in the midst of admission season for June-Dec. session. Since COVID has affected every section of our society, we have decided to give one time COVID discount @10% in the 1st Semester fees for the students seeking admission in both our AICTE approved courses. To provide relief to our students, we have further decided to collect the fees in two equal instalments and this benefit will be available to students of all semester. A formal circular in this regard was already issued to all Branches, who in turn will percolate the information to all the students. I take this opportunity to request everyone associated with IIMM to inform all prospective students to join IIMM courses and avail these benefits. As everyone is aware, this time we have a quota of 400 seats each in PGDMM and PGDSCM&L courses and we look forward towards your support to fill up the entire quota of 800 seats. It will be our constant endeavor to serve our students and with everyone's support we are confident to enhance our admission.

Please accept my greetings for ongoing festive season. Stay healthy and stay safe.

With Warm Personal Regards

A handwritten signature in black ink, appearing to read 'Malay Mazumdar'.

Malay Mazumdar

National President, IIMM

Email: Malay_mazumdar@yahoo.co.in

From the Desk of Chief Editor



Dear Members,

The New National Education Policy (NEP) policy recently approved by the Union Cabinet is set to bring a slew of major changes in Indian Education Sector. One of the stated aims is to bring deep rooted - feel proud factor in being Indian, not only in thoughts but also in Spirit, thoughts and deeds as well as to develop knowledge, skills, values, and dispositions that support responsible commitment to human rights, sustainable development and living, and global well-being. The policy aims at making “India a global knowledge superpower”.

National Education Policy (NEP) aims for Higher Educational Institutions to become Multi-disciplinary Institution by 2040, so that Gross Enrolment ratio in Higher Education including Vocational Courses can be increased from 26% to 50% by 2035. The present complex structure of various forms of Universities like “Deemed to be University, Affiliated University, Autonomous University etc. shall be replaced with Simple University offering multi-disciplinary courses i.e. Undergraduate and Graduate Courses with high quality teaching, research, and community engagement.

NEP 2020 talks about need of Research activities, innovation, creativity, problem solving capabilities besides Employability. Now Postgraduates or 4 Year undergraduates (B.E. or B. Tech) with Research can take direct admission in to PhD programs which will lead to more research and innovation activities both at undergraduate level as well as at PhD Level.

Various surveys have suggested that most of the passing graduates don’t feel ready for their first job and they always remain in the dilemma of staying or leaving the job. Freshers are not fully prepared for their working life and lack of proper education is one of the main reasons. With new revised policy aiming to focus on the holistic development of the emerging workforce- students, lot of Emphasis has been given to the Employability aspect of Higher Education and considering the importance of employability, vocational training in the form of internship will be integrated at the undergraduate level in all general education courses.

Hon’ble Prime Minister, urged the students during Smart India Hackathon to be a job creators rather than job seeker and how new NEP 2020 is playing a significant role in building Job Creators then Job Seeker. The 21st century is era of Knowledge and now is the time for focussing on increased learning, research and innovation. The New NEP 2020 also emphasize on Inter – disciplinary learning, which ensures that the focus is on what students want to learn instead of what students compelled to learn.

New NEP 2020 boasts of lucrative features like multiple certificates during graduation, this will encourage them to enhance their skillset with more confidence, even if they somehow need to leave mid-way. Other points like single governing authority, inviting top global universities, multi exit and entry for courses will surely favour student community. Industries too have reasons to cheer as they will witness a shift from summative assessment to regular and formative assessment, which is more competency-based promoting learning and development, and tests higher-order skills, such as analytical, logical thinking and clarity. All in all, the new policy seems to focus more on skill development over points like just building a good “report card” and hence, will lead to the creation of a more educated and employable Indian population.”

A handwritten signature in black ink, consisting of a stylized 'X' shape followed by a horizontal line and a small upward stroke.

(DR. M.K. BHARDWAJ)



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CONTENTS

PAGE NO.

■ PM MODI SPEECH ON NEP 2020 HIGHLIGHTS: I URGE ALL STAKEHOLDERS TO COME TOGETHER TO IMPLEMENT NEP BY 2022, SAYS PM	6
■ NEW 'RULES OF ORIGIN' TO CHECK MISUSE OF FTA PROVISIONS	8
■ SUPPLY CHAIN MANAGEMENT IN AGRICULTURE: PRACTICES, TRENDS AND POTENTIAL	12
■ WORLD CLASS SUPPLY CHAIN EXCELLENCE – AMAZING MUMBAI DABBAWALA	21
■ INVENTORY REDUCTION TARGETTED STRATEGIES - FOR SUPPLY CHAIN PROFESSIONAS / MANAGERS	26
■ COMMODITY INDEX	28
■ HUB EDGE AND SPOKE IN SUPPLY CHAIN	29
■ HOW CAN DATA IMPROVE SUPPLIER DECISIONS	31
■ MULTI OBJECTIVE OPTIMIZATION ON THE BASIS OF RATIO ANALYSIS	32
■ FIVE BENEFITS OF AN IOT-ENHANCED SUPPLY CHAIN	35
■ KISAN SABHA APP TO CONNECT FARMERS TO SUPPLY CHAIN AND FREIGHT TRANSPORTATION MANAGEMENT SYSTEM LAUNCHED BY CSIR	36
■ INVESTMENT IN LOGISTICS TO TOUCH USD 500 BILLION BY 2025	37
■ WTO UPDATE : DG AZEVEDO: "WE'VE ACHIEVED A LOT, BUT MUCH REMAINS TO BE DONE"	38
■ INDIA PLANS NEW SUPPLY CHAIN INITIATIVE ALONG WITH AUSTRALIA, JAPAN TO COUNTER CHINA	41
■ CIRCULAR ECONOMY AND BUSINESS SCENARIO	42
■ ITC ACCELERATES DIGITISATION TO ENHANCE OPERATIONAL EFFECTIVENESS:	44
■ DIGITISATION IS THE ONLY CHOICE FOR SMALL BUSINESSES IN INDIA — AND IT MAY ADD UP TO \$200 BILLION TO THE GDP	45
■ GREEN SUPPLY CHAIN MANAGEMENT – GSCM	46
■ SEVEN WAYS TO COPE WITH SUPPLY CHAIN DISRUPTIONS DURING A GLOBAL CRISIS	49
■ INFRASTRUCTURE SPENDING WILL DRAW THE ECONOMY FORWARD, SAYS NIRMALA SITHARAMAN	50
■ 3 WAYS TO PROTECT YOUR BUSINESS FROM SUPPLY CHAIN DISRUPTIONS	51
■ MANAGING THE TIME- THE EFFECTIVE WAY OF ACHIEVING SUCCESS	52
■ BRANCH NEWS	55
■ EXECUTIVE HEALTH	58

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PM MODI SPEECH ON NEP 2020 HIGHLIGHTS: I URGE ALL STAKEHOLDERS TO COME TOGETHER TO IMPLEMENT NEP BY 2022, SAYS PM

PM Narendra Modi Speech on NEP 2020, School Education Conclave HIGHLIGHTS: The NEP is the beginning of the new era and now we will have to ensure its implementation, says Modi.

PM Modi Speech on NEP 2020 HIGHLIGHTS:

Addressing students at the School Education Conclave, Prime Minister Narendra Modi on Friday talked about the changes the **National Education Policy (NEP) 2020** will bring. "The New education policy will sow the seeds for starting a new era, will give new direction to 21st century India," said Modi

The prime minister added that the focus needs to be on the implementation of the policy. "Our work has just begun; National Education Policy has to be implemented equally effectively," he said.

Within the past one week, the Education Ministry has received over 15 lakh suggestions on its implementation, said PM while addressing the conclave on 'School Education in 21st Century' organised by the Ministry of Education as a part of Shiksha Parv (festival of education). The Prime Minister had earlier talked about the higher education part of the NEP during a conclave on 'transformational reforms in higher education'.

The Shiksha Parv is being celebrated from September 8-25. Several webinars and conferences are taking place to discuss the action plan of the NEP 2020.

PM Modi speech on NEP 2020 HIGHLIGHTS: Key things that Modi said about school education under NEP 2020

We need to do it together: PM on implementing NEP

The National Education Policy 2020 is a way to fulfill the new aspirations and new hopes of our new India. It needs to be implemented effectively across the country and we need to do it together: Prime Minister Narendra Modi

Implement NEP by 2022: PM

Along with learning, we also have to unlearn a lot. By 2022, every student will be evolved into the new education policy. I urge all teachers, NGOs,

organisations, students, and parents to join the national mission. With your support the nation will implement the NEP successfully, said Modi

Students should be taught in mother tongue till class 5: PM

Language is just a mode of study and not a study in itself. We need to see that most of the energy of students should not be spent on learning the language rather than the subject. A child should understand what they are taught. In a lot of countries, elementary education is imparted in their mother tongue. It is a known fact that students learn better in the language they speak at home. In rural areas, parents are not associated with a child's learning because of the mode of teaching at school. At least till class 5, students should be taught in the mother tongue. Along with the mother tongue, students will be taught international languages including English but Indian languages will also be promoted, said PM.

NEP will take India learning from marks-based to learning-based education: PM

One of the major reasons behind the drop-out ratio is that students do not have the freedom of choosing their own subject but NEP will give the same. Now, students will not have to be limited to the watertight boundaries of commerce, science, and humanities and will choose any subjects they want to choose. It will bring the focus of marks and mark sheet based education back to learning based education, says Modi.

Schools will adapt to new curriculum framework by 2022: PM

NEP will reduce the syllabus and make learning a fun-based and complete experience. We have developed a new curriculum framework. By 2022, our students will join the new curriculum and step towards the new curriculum. It will be a future-ready and scientific curriculum. The future will have new skills including critical thinking, creativity, communication, and curiosity.

Students should learn to ask questions, should be sensitisised: PM

When a student will start a question, his or her curiosity will be built and they will start learning on their own. If a student will look at the practical aspect of their knowledge, they will learn better. A large section of students is kept away from the practical aspect of education. Many vocational trainings are often looked down upon. We need to sensitise our students, said PM.

PM Modi delivers a virtual address

Do not limit education to classroom walls: PM Modi

To ensure better learning, we need to ensure that study is not just limited to the walls of the classroom but is interlinked with the outside world as well, says Modi. Citing the example of Ishwarchandra Vidyasagar he said when education is interlinked with the outside world, it would impact the life of students as well as the entire society, he said.

Focus first on the foundation literacy: NEP

To take the journey of 'lean-to-read' to 'read-to-learn', we are taking steps to strengthen the foundation literacy. A student who is in class 3 can read at least 30-35 words in one minute, says Modi.

We need to implement NEP together: Modi

The National Education Policy 2020 is a way to fulfill the new aspirations and new hopes for our new India. It needs to be implemented effectively across the country and we need to do it together, said Prime Minister Narendra Modi

Over 15 lakh suggestions from teachers within a week

Ministry of Education has received over 15 lakh suggestions from teachers on the NEP 2020 within a week at the mygov portal. These suggestions will ensure better implementation of the policy, said Modi.

Questions on implementation are valid and critical

While nothing has remained the same in the past three decades, India's education system had remained unchanged. This was critical to bring a new education policy but it is only a beginning. Now we need to ensure proper implementation of the policy. The questions on how the policy will be implemented are not only important but also critical, says Modi.

NEP to give direction to 21st-century India

This is the foundation of the future of India. This is the moment which is planting the seeds of a new era. The NEP will give a direction to 21st century India, says Modi.

Pokhriyal welcomes Modi to the event

Minister of Education Ramesh Pokhriyal Nishak welcomes the prime minister, says over 15 lakh schools associated with the event and crores of students, teachers, and parents joined the same via videoconferences.

What changes will NEP bring to school education?

NEP brings several changes to the school education including universalisation of Early Childhood Care and Education (ECCE) for children up to the age 8; 10+2 structure of school curricula is to be replaced by a 5+3+3+4 curricular structure; integrating curriculum to 21st-century skills, mathematical thinking and scientific temper; development of new comprehensive National Curricular Framework for School Education; national professional standards for teachers; assessment reforms and 360-degree holistic progress card of the child; and vocational integration from class 6 onwards

School education under NEP : From school to beyond

While addressing the virtual grand finale of the 'Smart India Hackathon' earlier, Modi had said, "India's National Education Policy reflects the spirit of new India. We are **shifting from the burden of the school bag, which does not last beyond school**. To the boon of learning which helps for life. From simply memorising to critical thinking. The 21st century is the era of knowledge, learning, and innovation.

What is Shiksha Parv

The "Shiksha Parv" (education festival) is being celebrated from September 8-25 to felicitate teachers and take the New Education Policy forward. Various webinars, virtual conferences and conclaves on several aspects of the NEP are being organised across the country

Address to focus on changes brought under NEP for school system

Earlier Prime Minister Shri Narendra Modi also delivered the inaugural address at the 'Conclave on Transformational Reforms in Higher Education' where he talked about higher education. Now he will talk about NEP with respect to school education.

The prime minister has been championing the NEP and speaking to the stakeholders, highlighting its features and backing wide consultations to address everyone's concerns as it is implemented. The NEP-2020 is the first education policy of the 21st century, which was announced 34 years after the previous National Policy on Education in 1986.

Source : www.indianexpress.com

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NEW 'RULES OF ORIGIN' TO CHECK MISUSE OF FTA PROVISIONS

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It has been observed that imports under Free Trade Agreements (FTA) are on the rise. Undue claims of FTA benefits have posed a threat to domestic industry. It is sometimes flouted by importers to wrongly claim that a particular import is originating from an FTA partner country so as to pocket the benefits. Such imports require stringent checks to curb misuse of FTA Provisions. Accordingly, steps are being taken to crack down on frauds, re-work Rules of Origin (RoO) provisions. RoO determine whether enough value addition took place in the FTA partner country for the import to qualify as originating from there.

The government has come out with norms for the enforcement of 'Rules of Origin' provisions for allowing **Preferential Rate of Customs Duties** on Products Imported under **Free Trade Agreements** aiming at striking a delicate balance in its efforts to check misuse of FTAs by unscrupulous importers and ensuring that their use by legitimate businesses is not discouraged.

The Department of Revenue has notified the 'Customs (Administration of Rules of Origin under Trade Agreements) Rules, 2020' which would "**come into force on September 21, 2020**".

Purpose of "Rules of Origin" : RoOs are meant to define the '**nationality**' of imports and to make PTAs preferential. Countries enter into Free Trade Agreements with each other in order to provide enhanced, Preferential Market Access Opportunities to one another. But in order to put these into practice, it is necessary to have Criteria that tell us when products come from the partner country to whom such preferential access is given, and are not Re-Exported from another source (Country).

"Rules of Origin" are the criteria needed to **determine the national origin of a product**. Countries which offer zero or reduced duty access to imports from certain trade partners often apply a set of preferential rules of origin to determine the eligibility of products to receive preferential access.

The new norms have been framed with a view to put in place greater scrutiny of imports and **checking inbound shipments** of low-quality products and dumping of goods by a third country routed through

an **FTA partner country**.

The "Rules of Origin" provision prescribes for the **minimal processing** that should happen in the FTA country so that the final manufactured product may be called originating goods in that country.

Under this provision, a country that has inked an FTA with India cannot dump goods from some third country in the Indian market by just putting a label on it. It has to undertake a prescribed value addition in that product to export to India. Rules of origin norms help contain dumping of goods.

India has inked FTAs with several countries, including Japan, South Korea, Singapore, and ASEAN members. Under such agreements, two trading partners significantly reduce or eliminate import / customs duties on the maximum number of goods traded between them.

Where are Rules of Origin Used?

Rules of origin are used:

- Ø to implement measures and instruments of commercial policy such as anti-dumping duties and safeguard measures;
- Ø to determine whether imported products shall receive most-favoured-nation (MFN) treatment or preferential treatment;
- Ø for the purpose of trade statistics;
- Ø for the application of labelling and marking requirements; and
- Ø for government procurement.

Industry Concerns : There have been many incidents, where certain players have imported products with an origin of certificate that does not accurately reflect the country where these products have been actually manufactured.

The TV industry has been one of the key sectors that has been raising concerns about misuse of FTAs, as there is surge of import of televisions from Vietnam (which is part of the India-ASEAN FTA).

India's imports of copper, RBD (refined, bleached and de-odorized) palm-olein, paper and paperboard are mostly effected due to flouting of 'Rules of Origin' and dumping of these commodities under Free Trade Agreements (FTAs) from non-producing countries. Import of paper and paperboards from non-producing countries is a matter of great concerns for Indian manufacturers.

Import of RBD (refined, bleached and deodorised) Palm-olein from Nepal is feared to have originated from Malaysia. While direct import of Palm-olein attracts customs duty of 44.5 per cent, import through Nepal could be possible at 'Nil' duty under the South Asian Free Trade Area (SAFTA).

The government had levied MIP after pepper traders and exporters complained that Vietnamese pepper was coming to India via Sri Lanka with certificate of origin issued by the latter. Currently, India levies zero duty import on 2,500 tonnes of pepper from Sri Lanka annually under the Indo-Sri Lanka Free Trade Agreement. Any export above the limit is subjected to 8 per cent duty under South Asia Free Trade Agreement, as against the usual customs duty of 70 per cent on pepper import into India.

Each Trade Agreement, has its own set of Rules of Origin. Say under the FTA, 35 per cent value addition by the exporting country on free-on-board (FOB) value of goods is a required, then exporters adding shipping and other miscellaneous costs including handling, loading and unloading to achieve the mandatory norms of 35 per cent value addition.

"Value addition of 35 per cent is impossible in the case of copper. Huge quantities of refined copper bars that were being imported from Sri Lanka and Vietnam until recently, got curbed automatically after the Indian government removed copper bar from the FTA commodities list. Similarly, import of copper from other FTA countries can also be restricted for the benefit of local producers,"

Likewise, there are many instances of misuse of FTA provisions detected and evidences from recent FTAs suggest un-favourable gains to our trade partners.

Customs (Administration of Rules of Origin under Trade Agreements) Rules, 2020 (CAROTAR, 2020)

Notification No. 81/2020-Customs (N.T.) dated 21st August, 2020.

Circular No. 38/2020-Customs; Dated 21st August, 2020

The Salient Features of the "CAROTAR, 2020"

Preferential Tariff Claim - Filling of Bill of Entry:

According to the notification, to claim preferential rate of duty under a trade agreement, the importer or his

agent, at the time of **filing bill of entry**, has to **make a declaration in the bill** that the imported products qualify as originating goods for preferential rate of duty under that agreement; and produce **Certificate of Origin** covering each item on which preferential rate of duty is claimed.

Denial by the Proper Officer : The claim of preferential rate of duty may be denied by the proper officer without verification if the certificate of origin is incomplete or has any alteration not authenticated by the issuing authority or the certificate is produced after its validity period has expired.

Origin Related Information to be Possessed by Importer : The importer, also has to possess all relevant information related to country of origin criteria, including the regional value content as per as indicated in **Form I** of the Notification, and submit the same to the proper officer on request. The Importer shall keep all supporting documents related to Form I for at **least five years from date of filing of bill of entry** and submit the same to the proper officer on request. The Importer shall exercise reasonable care to ensure the accuracy and truthfulness of the aforesaid information and documents.

Requisition of information from the importer : Where, during the course of customs clearance or thereafter, the proper officer has reason to believe that origin criteria prescribed in the respective Rules of Origin have not been met, he may seek information and supporting documents, as may be deemed necessary, from the importer in terms of rule 4 to ascertain correctness of the claim.

Where the importer is asked to furnish information or documents, he shall provide the same to the proper officer **within ten working days** from the date of such information or documents being sought.

Verification could also be undertaken on random basis as a measure of due diligence.

Verification Request : An officer may, during the course of customs clearance or thereafter, request for verification of certificate of origin from verification authority (the authority in exporting country or country of origin, designated to respond to verification request under a trade agreement) where there is a doubt regarding genuineness or authenticity of the certificate for reasons such as mismatch of signatures or seal when compared with specimens of seals and signatures received from the exporting country.

Identical Goods from the Same Exporter or Producer - Reject of other Claims of Preferential Rate of Duty

Where it is determined that goods originating from an exporter or producer do not meet the origin criteria

prescribed in the Rules of Origin, the Principal Commissioner of Customs or the Commissioner of Customs may, without further verification, reject other claims of preferential rate of duty, filed prior to or after such determination, for identical goods imported from the same exporter or producer.

Compulsory Verification of Assessment : Where an importer fails to provide requisite information and documents by the due date prescribed under rule 5, or where it is established that he has failed to exercise reasonable care to ensure the accuracy and truthfulness of the information furnished under these rules, the proper officer shall, notwithstanding any other action required to be taken under these rules and the Act, verify assessment of all subsequent bills of entry filed with the claim of preferential rate of duty by the importer, in terms of sub-section (2) of **section 17** of the Act, in order to prevent any possible misuse of a trade agreement. The system of compulsory verification of assessment shall be discontinued once the importer demonstrates that he is taking reasonable care, as required under section 28DA of the Act, through adequate record-based controls.

Wilful Mis-statement or Collusion with the Seller : Where it is established that an importer has suppressed the facts, made wilful mis-statement or colluded with the seller or any other person, with the intention to avail undue benefit of a trade agreement, his claim of preferential rate of duty shall be disallowed and he shall be liable to penal action under the Act or any other law for the time being in force.

Authorized Signatories : The Rules of Origin under various trade agreements lay down the format of the certificate of origin, the period of validity, manner of obtaining the certificate and the procedure for verification of origin. One of the usual conditions for accepting the certificate is that it should be signed by the authorized signatories whose name, signature and seal have been communicated by the partner country through agreed channels. At present, the signatures and seals are received by the Board, either directly from the government of the partner country or through the Department of Commerce.

The Directorate General of Systems has built an online repository on ICES for storing the signatures/seals to facilitate comparison by the assessing officers. DRI has been tasked with uploading the data in the database.

The CAROTAR 2020 shall come into force on 21st September, 2020, to provide sufficient time for transition and to ensure that the prescribed conditions in terms of rule 4 are complied with. Necessary modifications in bill of entry format are being made to allow declaration in terms of rule 3(a) and 3(d) of CAROTAR, 2020.

Technical Terms Used : Each trade agreement, however, has its own set of Rules of Origin, and precise definition of each of the term listed below may vary. Importers are, therefore, advised to refer to the respective Rules of Origin also, as notified in terms of sub-section (1) of section 5 of the Customs Tariff Act, 1975.

i. Goods Wholly Obtained (WO): Goods produced or obtained without any non-originating input material incorporated.

ii. Goods that are produced using non-originating materials, i.e. not Wholly Obtained, are required to undergo substantial transformation in a country for the good to be qualified as originating. This criterion can be met using following method in combination or standalone, depending upon the criteria assigned for a good,-

- (a) Change in Tariff Classification (CTC);
- (b) Regional or Domestic Value Content (RVC/DVC); and
- (c) Process rule.

iii. Value Content Method: This rule requires that a certain minimum percentage of the good's value originates in a country for the good to be considered as originating. The components of value and formula for calculating such value addition may vary from agreement to agreement.

iv. Change in Tariff Classification (CTC) Method: To qualify under this origin criterion, non-originating materials that are used in the production of the good must not have the same HS classification (e.g. Chapter level, Heading level or Sub Heading Level as may be required in the Rules of Origin) as the final good. Depending on the Trade Agreement requirements, the good would have to undergo either a change in Chapter (CC), Heading (CTH) or Sub Heading level (CTSH) in order to qualify for preferential treatment under the FTA. Producers and/or exporters should know the HS classification of the final good and the non-originating raw materials.

v. Process Rule Method: This rule requires the good which is being considered as originating, to be produced through specific chemical process in the originating country.

Note: Same good may be assigned different originating criteria in different trade agreements.

vi. General Rule vs Product Specific Rule (PSR): Many trade agreements have a single rule for all goods that are produced using non-originating materials. In some agreements, for some or all tariff headings there are Product Specific Rules (PSRs). Depending on the HS classification of the good, it needs to be seen which criteria has been used to claim origin.

vii. De minimis: This provision allows that non-originating materials that do not satisfy an applicable rule may be disregarded, provided that the totality of such materials does not exceed specific percentages in value or weight of the good. This provision may or may not be there in an agreement and the percentage also varies from agreement to agreement.

viii. Cumulation/ Accumulation: The concept of “accumulation”/“cumulation” allows countries which are part of a preferential trade agreement to share production and jointly comply with the relevant rules of origin provisions, i.e. a producer of one participating country of a trade agreement is allowed to use input materials from another participating country without losing the originating status of that input for the purpose of the applicable rules of origin. Otherwise said, the concept of accumulation/cumulation or cumulative rules of origin allows products of one participating country to be further processed or added to products in another participating country of that agreement. The nature and extent of such cumulation is defined in an agreement and may vary from agreement to agreement. Cumulation can be bilateral, regional, diagonal, etc.

ix. Indirect/Neutral elements refer to material used in the production, testing or inspection of goods but not physically incorporated into the goods, or material used in the maintenance of buildings or the operation of equipment associated with the production of goods. For example, energy and fuel, plant and equipment, goods which do not enter into the final composition of the product, etc. Depending upon the trade agreement, these elements may be treated as originating or non-originating.

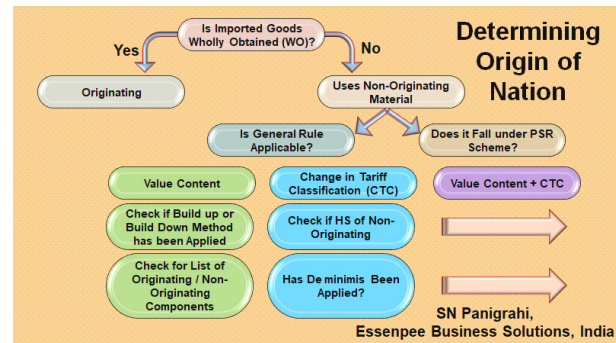
x. Rule on treatment of packages and packing materials for retail sale: Such rule provides the manner in which such material will be treated while calculating qualifying value content or tariff shift.

xi. Direct Consignment: Most agreements lay down the condition that good claiming originating status of a country should be directly transported from that country to the importing country. Certain relaxation may be provided in a trade agreement, subject to presentation of certain documents.

Criterion for Rules Origin

There is wide variation in the practice of governments with regard to the rules of origin.

While the requirement of substantial transformation is universally recognized, some governments apply the **criterion of change of tariff classification**, others the **ad valorem percentage criterion** and yet others the **criterion of manufacturing or processing operation**.



Comments :

These Rules are much awaited to establish clear, transparent, and fair administration of Rules of Origin under various bilateral trade agreements signed by India with world economies. These rules would make it clear for the businesses in India and abroad to know the exact procedures that would be adopted by the proper officer while evaluating the preferential rate of duty under trade agreements and the process for verification of certificate of origin. The rules of origin also to ensure that only goods originating in partner countries enjoy tariff or other preferences and also other Tariff related measures like Anti-Dumping Duty and Safeguard Duty are effectively Implemented.

As per the New Provisions origin related information like country of origin criteria, regional value content and product specific criteria etc. must be possessed by the importer and measures are also built in for Counter Verification and Penal Provisions to check the wrong practice of availing concessional customs duty on goods actually originated from Non-Preferential Country and routing such exports to India through preferential trade countries.

Though practically it may be very difficult for genuine importers to comply with these requirements to avail the benefits, in the overall interests of the Nation, it is very Essential to Protect Domestic Industry to encourage Atmanirbar Abhiyan.

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.

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SUPPLY CHAIN MANAGEMENT IN AGRICULTURE: PRACTICES, TRENDS AND POTENTIAL

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PART II: THE DISTRIBUTION NETWORK, CUSTOMERS OF AGRI BUSINESS AND IMPORTANT SUPPORT BODIES OF AGRIBUSINESS PLAYERS

Part I of the article dealt with the agricultural sector and its suppliers. However, operations performed post production of agricultural output also influence the overall performance of the supply chain. In fact, significant benefits would accrue to farmers when players who execute post production operations support farming operations and efficiently organize their operations. In this part, the discussion relates the distribution network, customers and other bodies who regulate and enhance agricultural development. The potential for analytic techniques is also highlighted.

THE DISTRIBUTION NETWORK

The distribution network plays an important role in ensuring quality and cost effectiveness. In this section, the examples of distribution systems developed by some for fruit and tea producers are detailed first. Next the role of third party logistics players is highlighted along with initiatives to modernize warehouses to reduce wastage of agricultural produce. The distribution systems developed by Ninjacart, an agri startup and ITC are used to illustrate the potential to reengineer systems and enhance supply chain performance. Support from land and sea ports are then discussed. The tool blockchain and its use in managing large distribution systems are detailed with an example. The use of analytic techniques to handle milk distribution in Quebec, Canada and the scope for similar initiatives in India is then discussed.

Consider for example, INI Farms Pvt Limited, Mumbai, a 200 crores fresh fruit company that controls and directs the operations of chosen products from farming to consumption. This includes farm level operations, contract farming, managing the supply chain and supplying fresh fruits across the world to large importers and retailers. Besides managing the distribution network, the company actively supports farmers during cultivation and executing primary processing and processing and packaging of fruits to ensure quality. Buying directly from the farm gates has ensured full traceability of the produce.

For some time, INI farms focused on pomegranates and bananas and is now getting into pineapples. It has become a leading exporter with markets in 21 countries including US, Canada, New Zealand and countries in the

European Union, Middle East and South East Asia. 20% of the product portfolio is sold in the domestic market.

Later, INI planned to expand and include other fruits and operate a strong supply chain to cater to the demand in the domestic and export markets. INI's further plans were to create post-harvest infrastructure, capacity building and value chain development for various fruits. A post-harvest integrated pack house facility of international standards has been set up near Pune for several processes like cleaning, sorting, grading and packaging of bananas, pomegranate and pineapple. These initiatives led to waste reduction and quality improvement. [Gupta (2017b)]

In respect of oranges, Maharashtra State Agri Produce Marketing Board (MSAPMB), a state-run body, has initiated specific programs to boost production, processing, marketing and exports of oranges through its agency, Maha Orange which is an apex body of the cooperative societies of the orange growers of the state has shown a significant progress in building a marketing and distribution network. This has helped farmers to get remunerative prices who otherwise struggled in the hands of middlemen. Maha Orange also organizes orange festivals both to popularize oranges and facilitate buyer seller meet.

Maha Orange is also promoting the export market. Daily supply to Bangladesh occurs during the season using road transport. 25 tons were exported to Sri Lanka. Plans were to export to Gulf and Singapore. The Vashi Exporters Association has also approached Maha Orange for augmenting export efforts. Maha Orange has signed an MoU with the Agricultural & Processed Food Products Export Development Authority (APEDA) to make an Export Facilitation Centre in Vidarbha. This facility will help in grading, packaging and branding of oranges. Maha Oranges will collect good oranges from farmers and send them to the Facilitation Centre for further handling prior to export. It has also tied with Mother Dairy in Delhi to sell oranges at 600 outlets. [Gupta, (2017a)].

The application of a powerful supply chain principle entitled "The Principle of Postponement" to agricultural supply chain operations could be illustrated by the example of M. K. Jokai Agri Plantations (P) Ltd, a

premium quality orthodox tea exporter. Besides cultivation at its plantations and exports, it has a wholly owned subsidiary _ J.C. Classic in Russia. There, a full-fledged packaging plant obtains tea from several countries besides M. K's own plantations and undertakes blending, packaging, branding and distribution of tea in Russia. J.K. Classic has 170 SKUs where 3.5 million Kg of tea are processed. These include several types of tea from super economy to premium ranges of black tea, green tea, flavored and Herbal tea. Together, an active distribution channel within the Russian Federation and captive production in Assam facilitate operations of a fully integrated tea player. Thus, some operations are postponed and executed closer to the market rather than in the countries where tea is produced. [Bose (2017)] This strategy reduces the inventory levels held and is powerful when large varieties are produced and or sold.

Stocks of fertilizers and food grains are often held at warehouses owned by third party logistics (3PL) firms. Specifically, inventories are held at the Central Warehousing Corporation, Food Corporation of India and Container Corporation of India. These firms have added on capacity and modernized their facilities. [Survey Warehousing (2017)]. Further, the 3PL sector in India has grown rapidly over the years with the entry of several private players. The trend is expected to continue. Firms in this sector also serve as transporters. This could help enhance the efficiency of the agricultural supply chain. For example, ports are sometimes congested and unable to hold stocks when large volumes are to be shipped. To cope with this, Apollo Logis, the Logistics arm of the Apollo group has located storage facilities close to ports. [Sinha (2017)] Similar initiatives by other 3 PL players would help to create efficient networks for the agricultural supply chain especially with anticipated increase in export volumes.

Warehouses could sometimes be operated as crossdocks, drawing from the supply chain principle 'crossdocking' pioneered by Walmart. Crossdocking is a system in which a truckload of goods is moved to a warehouse (or crossdock) and transferred to other vehicles for delivery to another point in the distribution network with little or no intermediate storage. That point could sometimes be an airport or seaport, in which case delivery time commitments must be met with. A crossdock handles stocks from several suppliers and delivers to several subsequent points in the distribution network. Analytic techniques serve as powerful tools to optimally assign trucks to warehouses and determine their arrival and departure schedules to minimize the total costs that comprises of costs of handling, inventory, transportation and delay penalties. Certain capacity constraints must be incorporated. [Miao et. al. (2009)]

Warehouse can enhance the quality of services through innovation and deployment of modern technology. The innovation team at Tata Steel, which focuses on new business development, initiated an approach to increase

the shelf life of onion during storage and promote the trend of community storage. The team conducted extensive studies on the existing onion storage infrastructure. While onion crop contributes to only 2.5% of the total crop output, it accounts for 20% of all crop wastage in India. There is already a storage gap of about 50,000 tons in the onion value chain and the storage losses are typically in the range of 35-40%. This led to the genesis of a Smart Warehouse with a unique modular design that serves needs from 400-4000 tons, maximizes natural air circulation, has automated environmental control and reduces spoilage through an early warning system. The structural design uses Tata Structura hollow sections that give significant weight and cost advantages as compared to conventional structural solutions.

Tata Steel is partnering with Go Damm innovation which has developed the early warning system based on an algorithm built on trend analysis of gas patterns. The first smart warehouse was planned Nashik for Sahyadri Farms, which has more than 8000 farmers registered with them. Through the Smart Warehouse venture, Tata Steel has embarked upon a journey to transform the agri-infrastructure segment and will continue to come up with innovative solutions. [Bhatt, (2019)]

National Collateral Management Services Limited (NCML), agri logistics services provider is in several areas including SCM and Warehouse services. To address the losses that farmers incur during handling, transporting and storing their produce, NCML initiated technology driven silo warehouse storage facility. This helped to retain the high quality of stored grain and ward off attack from insects by monitoring the produce every point of time end to end. NCML provides modern, scientific, IT enabled, 24x7 digitally monitored Storage and Preservation services to farmers, traders, exporters and importers, food processors and manufacturers..

NCML operates facilities across 18 states with approximately 175 warehousing locations dealing with a wide range of agri commodities. NCML has 750 dry storage warehouses operational at the 175 locations with an aggregate capacity of more than 1.5 million. [Bhatt, (2019)]

The power of a well-designed distribution system could be illustrated by the example of Ninjacart, an agri startup, India's largest fresh produce supply chain. Thirukumaran Nagarajan and five other cofounders started Ninjacart in 2015 in Bangalore. Its short term goal was to build a strong distribution network of a million retailers, restaurants and food service providers including small and unorganized provision stores. Its long term mission is to make safe food affordable and accessible to a large number of people. Its major achievement is the elimination of intermediaries. As a result farmers get more remunerative prices for their produce. Also inefficiencies in the supply chain that previously existed have been eliminated owing to a

reliable, cost-effective and high speed logistics and infrastructure. Retailers and other buyers consequently get fresh stocks at competitive prices. This was due to use of an integrated supply chain that enabled Ninjacart to offer high service quality in respect of cost, lead time and freshness in supplies.

Ninjacart engages farmers in various awareness programmes to highlight the benefits of selling their produce through Ninjacart. It also educates farmers on the desired quality.

While the traditional distribution system resulted in 30% food wastage and agri supplies take 12 hours to reach stores, in the current system deliveries are faster, cheaper and wastage is less than 1%. This has occurred as Ninjacart estimates and communicates demand to farmers who plan their harvest without uncertainty. Sources of supplies can be easily traced owing to use of RFID.

The first step to evolve a scientific system was to acquire and understand the 'farmer harvest calendar' which would give the team an overview of the fruits and vegetables available in each season to understand the supply pattern. Next, it needed a fairly good idea of what the market expects. For this, the company examined past buying behavior of customers_ what they ordered, and frequency of orders and to know which items to procure. (Pricing and forecasting)

Using the above information, appropriate quantities of produce is transferred into crates at collection centres at the farm level. These are moved to fulfillment centres for aggregation and then to distribution centres to deliver products to retail stores. Specifically, each day, large quantities of vegetables and fruits are delivered to thousands of shops and retail stores across multiple cities in India in just two and a half hours. Aps are used to record movements.

To minimize distribution times and costs, scientific techniques are used to determine optimal allocation of produce to vehicles and optimal routes incorporating vehicles and warehouse capacities.

By 2019, Ninjacart operated in Chennai, Bangalore, Hyderabad, Mumbai, Delhi and Pune with plans to add six other cities. Connect has been established with over 6000 farmers located in around 120 villages across Karnataka, Andhra, Tamil Nadu and Maharashtra.

The startup further plans to further step up the use of data and predictive models. It has a database of around 40 different markets in terms of arrivals, supply, price, etc. In future, it can predict the prices of vegetables and fruits and production output. A thirty member tech team is working on the project.

Use of sophisticated algorithms to manage logistics and supply network has been a major factor that contributed to the firm's success in its mission. Now, Ninjacart is in the early stage of exploring Artificial Intelligence to

improve business decisions, understand customers and improve forecasts. The company is also targeting new category lines like rice and pulses that have longer shelf life. [Gera, (2019)]; [Krishna, (2019)]; [Malik (2019)]; [Poojary, (2019)], [www.ninjacart.com]

The strength of Ninjacart's distribution system is discernible from Walmart and Flipkart's announcement of a joint strategic investment in Ninjacart in December 2019. Partnering will help procurement of fresh produce for Walmart India and Flipkart's online grocery store. Ninjacart too can target newer markets in other cities as well as learn and imbibe global best practices. [Press Trust of India; (2019)]

The emergence and rapid growth of Ninjacart proved a boon to farmers and the common man during the current lockdown. Farmers grew anxious as they were not sure whether their produce could be sold. At that point in time, Ninjacart stepped in and expressed their willingness to buy from farmers, including those who were not their suppliers earlier. Ninjacart also partnered with Amazon, Swiggy and Dunzo to facilitate sales. [Gera (2020)]

Similarly, ITC's agribusiness division, India's second largest exporter agri products initiated e-choupal to provide internet access to rural farmers. E-choupal is a virtual market place where farmers can transact sales directly with customers. Farmers earn more as dependence on middlemen is eliminated. Farmers also learn best agricultural practices and receive weather reports. ITC too, could operate a simplified supply chain and its revenue increased. [www.itcportal.com].

In an agricultural supply chain, ports both, land and sea ports, are also important players especially owing to increased thrust on exports. Petrapole, a land port facilitates more than 80% of India's exports and imports, both in terms of volumes and value to Bangladesh. Products exported to Bangladesh include tractors, cereals, onions and raw cotton garments. Imported items include cotton rags, jute bags and ready-made garments. Trade has grown over the years and the mix has changed. Land Port Authority of India (like Airport Authority of India) was set up to address infrastructural improvement on the Indian side of the border. Infrastructural problems exist on both sides of the border and has been a deterrent to trade. Bangladesh does not have the integrated terminal and warehouses needed to handle a large number of trucks. If bottlenecks are addressed, India can one again become the largest exporter to Bangladesh which it lost to China. [Ghosh (2017)]

In respect of sea ports, the bulk cargo vertical of Kakinada Deep Water Port (KDWP) caters to the shipment of sugar and fertilizers. Its mechanized conveyor systems help achieve faster turnaround of vessels at the port. The bulk cargo vertical also handles fertilizer raw materials like sulphuric acid and ammonia as well vegetable oils which are transported using

pipelines. In 2015, KDWP initiated its containerization activity. It has then augmented the door step delivery services of food grains and certain other products. KDWP is aggressively looking to connect to the Far East, Middle East and African markets to achieve a global footprint. India has launched the *Sagarmala* Program under which budgets have been allocated to modernize ports and increase their capacity. This is expected to reduce logistics costs and shipment times. The agricultural sector could network with ports to enhance supply chain efficiency. [Rana (2017)]

Since the distribution networks are often large, use of information and scientific techniques is vital to efficiently manage the network. Block chains facilitate handling information. Blockchain serves to store massive data available through IoT in an accessible and yet secure manner. A Blockchain serves as a ledger that stores information. The ledger can be written to and accessed (possibly authorized) from any location and its data are stored in a peer-to-peer network. Once a block has been added to a chain, it cannot be altered unilaterally. Thus, the ledger is both distributed and secure.

The entire history of a product as it traverses along the supply chain can be captured using a blockchain. Since a blockchain can be entirely digitized, information can be uploaded from IoT sensor data and hence information in the blockchain will be accurate as long as the sensors are accurate.

The example of handling the movement of kiwifruit from New Zealand to China is illustrative of the power and utility of a blockchain. Suppose each piece of fruit is automatically tagged with a micro RFID tag on picking. Each time the tag passes a reader, the location and time stamp information is uploaded on to the chain. Once packed into a tray, when a temperature monitor is attached to the tray, every time a reader is passed (e.g. when loading and uploading from a shipping container) the full history of the temperature experienced by every item is uploaded to each of the fruit's chain. A Chinese buyer can then scan the tag and access it to the website that translates the blockchain information into useable information. For example, a buyer can ascertain how old each piece of fruit is, the extreme temperatures it has been exposed to and its likely condition at its optimal eating point.

In general, such information facilitates efficient handling of product recalls, increases product safety and decreases fraud. It could significantly enhance accountability of the supply chains, provided methods to input the information are devised. [Olsen and Tomin (2020)]

Analytical techniques serve as powerful approaches to plan and operate large distribution systems with several production centers, distributors, retail outlets and customers. This will be illustrated by the example of dairy operations in Quebec, Canada.

Dairy business in Canada is based on planned production, regulated prices on production and controlled dairy imports for milk and other products. Also transportation of milk from farms to processing plants and subsequently to consumers is centrally regulated by the government and industry partners. Specifically in Quebec, a Federation (FPLQ), a coalition of dairy farmers is responsible for managing and centrally negotiating the costs, fares and transportation of milk. Milk transportation spans over 28 million kilometers and involves \$70 million of annual expenditure. The transportation of milk from farms to processing plants is therefore a critical facet in the milk supply chain.

Several transporters handle milk distribution. Each owns one or more depots where their trucks are parked and operated as per requirements. Decisions involved are allocation of farms and processing plants to depot vehicles and the sequence in which vehicles are routed to assigned farms. This problem is the well known Vehicle Routing Problem. Optimization techniques are used to determine the plans, incorporating vehicle capacity and other restrictions. Since milk from each farm is collected every alternate day, plans too, alternate every two days. An annual plan is determined, but plans are revised each day owing to factors such as vehicle unavailability and milk spoilage. The routes specified by the annual plan and the distances traversed by vehicles are used to price the services to processing plants. The methodology enabled the system to operate the vehicles for a shorter duration and consequently reduce costs significantly. [Lahrichi et. al. (2015)]

In India, the dairy industry produces an array of products like butter, ghee, skimmed milk powder, nutrition based health drinks, packaged milk products like paneer, ready to use curd, etc.

Several players like Amul, state cooperative federations and multinationals like Nestle, Donon and Lactolis are aggressively harnessing the untapped business potential. There are 28 state federations, 218 district unions, 1,85,903 dairy cooperative societies. These societies are directly associated with 166 million farmers. Strategic partnerships and competitive intelligence can create and distribute tangible benefits by strengthening the backend and frontend supply chain. Specifically White Revolution 2.0 can strengthen the scope of vertical integration between cattle feed industries, dairy machinery firms, producer cooperative unions, state marketing federations, advertising and marketing firms, logistics and distribution agencies. [Dey (2019)]

A study and implementation of proven practices such as the dairy transportation system of Quebec could help to control costs in India too.

CUSTOMERS: THE RETAIL SECTOR

Agricultural output is often sold through several retailers like Walmart, Big Bazaar, Nilgiris, Trent

Hypermarket and Reliance. For example, INI's packaged fruits are sold at Big Bazaar and Star Bazaar, a Tata & Tesco Enterprise. Star Bazaar is a unit of Trent Hypermarket, a part of Trent Limited, a retail company in the Tata group. Trent Hypermarket plans to create partnerships for a wide choice of quality fresh fruits and vegetables [Gupta (2017b)].

In 2017, Star had already partnered with 150 farmers in Maharashtra and Karnataka with further plans to expand the network in Telengana. Plans were also to invest in a warehouse at Rs 25 crores. [Rishi Kumar (2017)]

Use of analytic techniques in decision making in large retail networks could enable cost effective operations and enhance the profitability of the supply chain as a whole.

For example, BBG (disguised name), a European grocery retailer has six distribution centers that serve 200 stores. At BBG, analytic approaches are used to support purchasing decisions across several stock keeping units to optimize inbound and outbound logistics decisions at the retail distribution centers. This helped to minimize the total costs that comprises of costs of transportation, purchasing, ordering, inventory, storage and distribution center related costs like receiving, loading, unloading and breakdown. Several operational factors were incorporated while developing the system. For example, several stock keeping units of BBG procure items from a single vendor and such orders are replenished together for economy in transportation. Also, such vendors offer discounts owing to larger purchase volumes. The system helped to reduce costs by about 20% which is equivalent to 11.6% of net profits. [Erhun and Tayur (2003)]

Retailers like Trent who operates large distribution systems could also use analytic approaches analogous to BBG to enable cost effective operations. Cost savings could then be incorporated during decisions on transfer pricing for mutual benefits among different players including farmers.

CUSTOMERS: THE MANUFACTURING SECTOR

Several manufacturing companies in the food, ayurvedic formulations, jute goods and textiles use agricultural output as input materials in production. These players often network other players in the supply chain including farmers. This could be illustrated with the example of Keventer Agro Limited, the food processing business of the Keventer Group.

Keventer Agro Limited based in Kolkata, produces several products_ dairy, bananas, frozen foods. It has partnerships with Parle, ITC, two of India's highly respected corporate houses. It links seeds, clones and saplings to cultivated fruits, vegetables and milk using the best of related high end technology [www.keventer.com]

The Keventer Group signed a Memorandum of Understanding (Mo U) with the State Food Processing Industries and Horticulture Department for cultivation of organic banana in the districts of Nadia and Murshidabad. This will generate employment opportunities for farmers and others. The investment cost of Rs. 23.5 crores is being shared by the farmers, the state government and Keventer. Keventer will also provide training to farmers to grow crops and saplings, operate machinery and other infrastructure. All the harvested bananas will be purchased by Keventer, so that farmers do not incur losses. Use of proper preservation techniques at Keventer's end prevents losses due to spoilage. This clearly is illustrative of networking between suppliers and producers for mutual benefit.

Similar partnerships could be organized between manufacturers and others in the supply chain. Rebobank, a global leader in food and agribusiness organized the Economic Times Food Strategy Summit which delved on the impact of climate change on the food value chain and its business profitability. A distinguished panel deliberated on making farming more profitable, technology adoption, public private partnerships, etc. The panel strongly advocated that to reap benefits from technology, large companies should view agri-tech companies as partners rather than only vendors. The practice of considering vendors as an extension arm of manufacturing companies has been in operation in several manufacturing sectors with advantage to both parties. This practice could therefore be imbibed in the agri supply chain too. [Chandak (2020)].

SUPPORT ORGANIZATIONS/ BODIES FOR THE AGRICULTURAL SUPPLY CHAIN

Banks/ financial institutions, consultants, research organizations/ learning centers support the agricultural supply chain extensively.

Three examples of support from government/ government organizations are cited below:

Ø The electronic national agricultural market or e-NAM portal

At the states level, same governments established an Agricultural Produce Market Committee (APMC), a marketing board to ensure that farmers are safeguarded from exploitation by retailers. As per the APMC act, the first sale of the product can occur only at market yards. This helps to alleviate the problems arising from small land holdings as the market yards facilitate aggregation of farm produce and economy in delivery to customers. At the national level, the concept of 'Farmer Producer Organization' (FPO) was promoted where farmers could register under the Indian Companies Act. The organization works in the interest of farmers.

Benefits of drawing on the services of APMC and FPO,

services to farmers could be enhanced by deployment of I.T. In April 2016, the Prime Minister launched the electronic national agricultural market or e-NAM portal, a pan-India electronic trading portal. This portal is managed by Small Farmers' Agribusiness Consortium (SFAC) along with Nagarjuna Fertilizers and Chemicals' kisan division as a strategic partner and the two develop, operate and maintain the portal. This portal networks the existing APMC mandis to create a unified national market for agricultural commodities. This provides uniformity in agricultural marketing across the integrated market.

The government has decided to give accredited warehouses, the status of mandis and these warehouses will be linked with the online platform to enable farmers get better access to markets and consequently higher returns from sales. The Warehousing Development and Regulatory Authority (WDRA) has accredited and registered a very large number of warehouses across India. Farmers can utilize the cleaning and grading facilities at such warehouses and avail of better storage facilities than a mandi in case they are unable to sell their produce at a given point in time. Warehouses will bring in more traders to participate in the e-NAM platform and enhance their business levels. Besides ensuring quality of stocks, storage and delivery, traders will benefit from warehouse support in managing logistics. Plans are to rope in the WDRA to play a major role in promoting trade through e-NAM. E-NAMs clearly enhance the value of FPO and APMC.

The move has already increased the volume of trade and revenue and further growth is expected. The concept is new and hence a complete shift to the digital platform will take time. However, by 2018, 585 mandis have already been integrated into the e-NAM platform and the government decided to integrate 415 more mandis by 2019-20. Farmers and traders need to be persuaded to use this platform which is not compulsory. The benefits will be discernible when inter mandi trading takes off. [Mishra (2018); Salvi (2020); www.enam.gov.in]

Owing to Covid-19, in a move to decongest mandis and maintain supply chains of fruits and vegetables, the Centre added two more features on the e-NAM) platform to make it more convenient to for farmers to sell their produce at warehouses and collection centres set up by farmer producer organizations (FPOs). Agriculture minister Narendra Singh Tomar launched the new features of e-NAM which will strengthen agriculture marketing and reduce the need for farmers to physically come to the mandis for selling their produce. The warehouse-based trading module in e-NAM software will facilitate trading from the premises of warehouses based on negotiable warehouse receipts in electronic form (e-NWR) while the other module will allow farmers to access to the e-NAM platform collection centres of FPO. [F.B. Bureau; (2020b)]

Analytics could be used to further enhance the impact of the e-portal by addressing decisions on warehouse location and layout and warehouse operations as well as managing distribution.

Ø The National Agricultural Bank and Rural Development

The National Agricultural Bank and Rural Development (NABARD) organizes financing for agriculture and allied activities in rural India. Through government support, a corpus of Rs. 40,000/ crore is set as long-term irrigation fund. Several irrigation projects have been identified to cover a large mass of land. Additional budget has been allotted for state government subsidized projects linked with drip irrigation, farm products and others. This would farmers to operate at lower costs. Using contributions from commercial banks, Rural Infrastructure Development Fund (RIDF) has been constructed. NABARD lends this money to state governments and banks towards building roads, micro irrigation projects, veterinary hospitals and health centers across the country. Money is also reserved for short term crop loans.

Among several other initiatives, NABARD set up a dairy processing and infrastructure development fund to upgrade existing facilities across India. This helps farmers to earn all throughout the year rather than only during the harvest period. By modernizing and stepping up the milk processing capacity, India can be an exporter of milk.

Over the years NABARD has built four subsidiaries which act as enablers of financial inclusion. These are NABARD consultancy services started in 2004 to formulate and appraise projects; NAB Financial Services which specializes in low cost micro finance; NAB Samrudhi which focuses on nonfarm sector opportunities in rural India and NAB kisan which offers immense potential to build on a cooperative framework of farmers which bring their produce together under a farmers' producer organization.

The cooperative bank framework is arranged in tiers with state level and district level banks and below them the primary agricultural cooperative societies (PACs). The rural cooperative banks which are under the direct supervision of NABARD have moved to a common cloud-based core banking solution developed by TCS and Wipro. Now PACs are required to upgrade their systems for which the government has offered NABARD support to computerize and integrate 63000 functional PACs with the core banking system of district cooperative banks. There are 92000 PACs in India with a total membership close to 70 million households. Farmers are members of these societies and the societies are members of district banks, bringing technology to the PACs to the last mile of financial inclusion. [Rodrigues (2017)]

NABARD encourages FPO initiatives and trains farmers for business activities related to farm produce. With a

view to further extend support to FPOs in Gujarat, the Ahmedabad branch of NABARD is in talks with CSR arms of major industrial houses including Reliance, Tata and Ambuja.

To provide bigger platforms to FPOs in the state, NABARD, Ahmedabad in advance stages of the talk with Reliance Foundation managed by Reliance Industries, Ambuja as well as TCS for Rural Development. With the help of these conglomerates, the FPO members can sell their produce in bigger markets. Their produce can be sold in retail chains of Reliance. Their other requirements including effective transportation, cold storage, facility, etc can be fulfilled through involvement of corporate. [F.E. Bureau (2020a)]

Analytics is generally applicable in the areas of Project Financing and Appraisal. In respect of agricultural development, it has, for example been applied to the Jayakwadi irrigation project in Maharashtra. Specifically, analytic methods were used to rank order different irrigation strategies incorporating economic benefits, agricultural production and labor employment. [Raju, Kumar & Duckstein (2006)]. Since NABARD executes several projects and invests capital in projects, analytics has extensive scope for use.

Ø The National Agricultural Co-operative Marketing Federation of India

The National Agricultural Co-operative Marketing Federation of India, (NAFED), an apex organization under the Ministry of Agriculture and Farmers Welfare, Government of India (GOI) was founded in 1958. NAFED's mission is to promote the trade of agricultural produce and forest resources of India and its initiatives are directed to the improvement of agriculture and post harvest produce. The organization deals with procurement, processing, distribution, export and import of selected agricultural commodities like paddy, millets, onion, potatoes, pulses, tea and spices.

The following are NAFED's present and future thrust areas:

- 1) Price support measures to support farmers as well as consumers: The price support measures are Minimum Support Price to cope with bumper production and Price Stabilization Scheme to cope with shortages. Shortages are to an extent averted by holding buffer stock. Consumers include Army and Central Para Military Forces. NAFED also organizes supplies for the Public Distribution System, Mid Day Meal Schemes and Integrated Child Development Services. An Institutional Supplies division has been created for the execution of these tasks. To ensure timely and efficient completion of these tasks, NAFED has empanelled more than 300 millers across the country for milling, packing and delivery to different institutions.
- 2) Investment in Post-harvest infrastructure like warehouses, cold chains, at the farm level and terminal markets: This is to stabilize the supply of crops.
- 3) Provision of quality seeds: NAFED undertakes production, distribution and marketing of seeds under various schemes of Government of India. Seed production processes are undertaken only from Breeder Seeds and Foundation Seeds of notified varieties not older than ten years. This is to ensure good germination, purity and viability of seeds. With high credibility and acceptance among the farmers, NAFED has seen average year-on-year growth of 48.9% in seed production in the last five years. NAFED is now aiming for capacity expansion of seed production to meet its annual requirements of seeds. It also undertakes supply of Certified Seeds Minikits and General Supplies to benefit the farming community in the country.
- 4) Expansion of retail footprints on pan-India basis: NAFED has successfully established its presence in the retail sector with an aim to diversify its activities and making available tea, grocery, poultry and other daily needs through three of its own outlets and seven franchisee stores in Delhi and two retail outlets in Shimla under the name of 'NAFED Bazaar' It also sells its products online to maximize its outreach. Currently, efforts are underway to expand the retail footprints on pan-India basis through super stockist and distribution network.
- 5) Production of bio-fertilizers: The bio-fertilizer products produced by NAFED Bio-Fertilizer (NBF), Indore facilitate the agricultural productivity and quality of crops to a great extent. The unit is also in process of manufacturing liquid bio-fertilizers. The products are highly popular among the farmers' community despite cut throat competition. Profits are consequently very high.
- 6) Consultancy Services: NAFED offers consultancy to overseas countries for establishing mandies/ commodity exchanges and other infrastructure for marketing and agricultural produce; Expansion of Post-Harvest Infrastructure and Certified Seed Production.
- 7) Thrust on organic farming and agri-residue management [Pathak (2020)]

NAFED clearly could explore the scope to develop and use analytic approaches in seed production and in physical distribution drawing from the experiences of international organizations like Syngenta, Monsanto and Quebec Dairy Transportation. NAFED could also

draw on research on operating cold chains. Stocks in cold chains are held in controlled environmental conditions both during storage and transportation to prevent deterioration. For transportation reefer vehicles (vans, trucks, containers, etc) could be used. However, when stocks of perishables are held for long durations in cold chains, energy consumption increases. This leads to high carbon footprints that result in increased operating costs and deterioration of product quality. To address sustainable logistics, researchers and practitioners have therefore addressed the problem of optimal usage of pack houses, network management of reefer transportation, design of ripening chambers, optimal usage of technology, power and roads, effective tracking and tracing of perishables in the food chain, procurement and distribution system and waste minimization [Vrat et.al (2018)]. Relevant knowledge from literature could offer useful insights to NAFED.

Private sector too, has contributed to the development of agriculture. Some examples are:

Ø IT Firms and Consultants

The Centre of Excellence of Hewlett Packard Enterprise (HPE), a spinoff from Hewlett Packard has helped farmers in Chittoor, Andhra Pradesh, to apply IoT to farming. This would enable farmers to increase crop yield, nutritional value and revenue from their produce. Using analytics, farmers can test the soil conditions and sometimes reduce water consumption; leading to a 40% savings compared to traditional approaches. [F.E. Bureau (2020c)]

Consultants (including IT firms) too, are powerful support to the agricultural supply chain players. For example, Awdesh Kumar and Biswadeep Paul launched Quenext, an artificial intelligence and data analytics lab in 2015.

Quenext's technology has also been able grade every parcel of land under cultivation based on productivity and yield. By analyzing the past plot data, Quenext maps the behavior of the plot, the yield pattern and predict the crop yield plots under agricultural cultivation. Such data also helps to monitor the plots on weekly or fortnightly basis. Farms have been categorized as super prime, prime, sub-prime, average and waste land using satellite technology. Effective prediction of the yield based on the categorization is useful to bankers while providing loans to farmers. Reduced risk also offers scope to lower costs of loans. Currently, one of the primary concerns of the government is leakage of fertilizer subsidies. Quenext's platform would become useful for this purpose too. With satellite monitoring one can predict if a plot has received the quantity of fertilizer it has claimed. [Roy (2017)]

Similarly, the company Granular has raised \$18.7 million to develop the Acre Value software package that tracks 40 million farm parcels in a database containing three years' worth of land transaction records, plus

public sources of crop rotation, soil and environmental data. [Byrum (2017)]

Ø Research Laboratories and Learning centers

Research laboratories and learning centers are useful sources for gathering expertise. Syngenta, for instance is helping farmers in India to make judicious use of water, agrochemicals and farm inputs to increase the yield of cotton by 25-30 percent. Syngenta Learning Centers have been set up on a small plot of around 0.5 hectares to educate growers on Syngenta's technologies and solutions. As a result, farmers learn to cope with challenges arising from inadequate irrigation, poor germination, pest and disease attack, improper agronomic practices and several others. Syngenta also has an R&D facility at Aurangabad where it spends Rs 70 crores. [Hindu Business Line 2015]

Thus public private partnerships' initiatives are discernible.

CONCLUSIONS

The supply chain philosophy which has evolved over years has been a powerful performance driver for several businesses. The agriculture sector and their channel partners clearly, are no exceptions. In particular, networking among partners to understand others' requirements is critical to enhance performance. Big data and analytics offer scope for data-based decisions of better quality. With Enterprise Resource Planning Systems, there is a lot of potential to evolve and enrich supply chain systems. These when integrated with initiatives such as benchmarking and study of best practices could help to reengineer supply chains extensively. The government and other bodies in the public and private sector could actively support and catalyze the process.

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“WORLD CLASS SUPPLY CHAIN EXCELLENCE – AMAZING MUMBAI DABBAWALA”!

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Abstract: If you are a **Mumbaikar**, we are pretty sure at some point or another of your life you must have heard about the famous **Dabbawalas** of **Mumbai**. The **dabbawalas** (also spelled **dabbawallas** or **dabbawallahs**, called **tiffin wallahs** in older sources)

constitute a lunchbox **delivery and return** system that delivers hot lunches from homes and restaurants to people at work in India, especially in Mumbai. The lunchboxes are picked up in the late morning, delivered predominantly using **bicycles** and **railway trains**, and returned empty in the afternoon. They are also used by meal suppliers in Mumbai, who pay them to **ferry lunchboxes** with ready-cooked meals from central kitchens to customers and back.

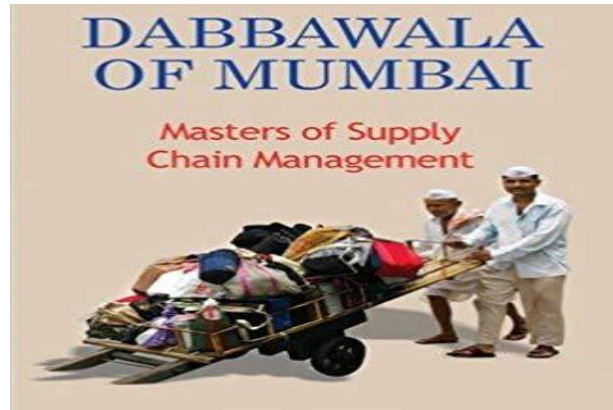
Still in the digital age, an army of Dabbawaladelivers 200,000 lunches to Mumbai's workers. Hot and healthy food are collected at a small price, in any season, from the residences of workers or from central kitchens, and daily provided to the **customersin time**.

Based on primary research and more recent literature, this paper provides updated perspectives on the mumbaidabbawala supply chain business excellence with special focus on the **their uninterrupted services of their business model**.

Key Words: (Business, CustomersDabbawalas , Excellence ,Mumbai, Supply Chain,)

I. Introduction: A Dabbawalais someone who carries a **Dabbas**, an aluminium cylindrical tin, containing home cooked food. The Dabbawala's organization started with a hundred men who lunched the delivering service in the years 1890, a period when Bombay saw an influx of people from various communities and regions of India migrating to the city. Most commonly found in the city of Mumbai, who is employed in a unique service industry whose primary business is collecting the freshly cooked food in lunch boxes from the residences of the office workers, delivering it to their respective workplaces and returning the empty boxes back to the customer's residence by using various modes of transport.This service not only managed to survive, competing with canteens and fast-food centres, but has also been extended to other cities on India.

Today there are **5,000 Dabbawala** in Mumbai, **delivering lunch to 200,000 people every day (400,000 transactions every day)**. At an average of Rs. **200 rupees per lunch box per month**, they have a turnover of **500 million rupees** per year, despite relatively low in-kind investments in manpower and costs of transports.



The efficient sustainable service is a job daily done without any use of **technology** and with almost **no errors**. The Dabbawala service was registered as a commercial Association in 1968 (**Mumbai Tiffin Box Supplier's Association**). The Dabbawala Foundation provides medical cover and security conditions for its employees.

II. History:It was the time when India was under the British rule. British people who came to the colony did not like the localfood. A Parsi banker employed a person

to bring home-made food to site of work. His colleagues too liked this idea and started availing this service. Started a lunch delivery service with about 100 men in 1890.

III. Origins: In 1890 Bombay, Mahadeo Havaji Bachche started a lunch delivery service with about a hundred men. In 1930, he informally attempted to unionize the dabbawalas. Later, a charitable trust was registered in 1956 under the name of **Nutan Mumbai Tiffin Box Suppliers Trust**. The commercial arm of this trust was registered in 1968 as **Mumbai Tiffin Box Supplier's Association**.

The service was born during the British Raj in 1890s out of sheer necessity. With more and more migrants of varying communities reaching the big city in those days and no fast food culture and office canteens around to calm the hunger pangs at noon, there was a lack of an effective system to ensure that office-workers could eat at lunchtime. There was also a supply of illiterate workers, who had travelled to the cities due to agriculture not being able to support them. With insufficient education to work as clerks in British homes, but with enough sinew and energy to undertake any hard work, the idea of delivering home-made food was born.

IV. Terminology : When literally translated, the word “dabbawala” means “one who carries a box”. “Dabba” means a box (usually a cylindrical tin or aluminium container) from Persian: while “wala” is an agentive suffix, denoting a doer or holder of the preceding word. The closest meaning of the dabbawala in English would be the “tiffin box delivery man”.

V. Workflow: Lunch boxes are marked in several ways

1. Abbreviations for collection points
2. Colour code for starting station
3. Number for destination station
4. Markings for handling dabbawala at destination, building and floor

A **colour-coding system** identifies the destination and recipient. Each dabbawala is required to contribute a minimum capital in kind, in the form of two bicycles, a **wooden crate** for the tiffins, **white cotton kurta-pyjamas**, and the **white Gandhi cap (topi)**. Each month there is a division of the earnings of each unit. Fines are imposed for alcohol, tobacco, being out of uniform, and absenteeism.

A collecting dabbawala, usually on **bicycle**, collects dabbas either from a worker's home or from the dabba makers. As many of the carriers are of limited literacy (the average literacy of Dabbawallahs is that of 8th grade), the dabbas (boxes) have some sort of distinguishing mark on them, such as a colour or group of symbols

The dabbawala then takes them to a sorting place, where he and other collecting dabbawalas sort the lunch boxes into groups. The grouped boxes are put in the coaches of trains, with markings to identify the destination of the box (usually there is a designated car for the boxes). The markings include the railway station to unload the boxes and the destination

building delivery address. Some modern infrastructure improvements such as the Navi Mumbai Metro are not used in the supply chain, as cabins do not have the capacity for hundreds of tiffins.

At each station, boxes are handed over to a local dabbawala, who delivers them. The empty boxes are collected after **lunch or the next day** and sent back to the respective houses. The dabbawalas also allow for **delivery requests through SMS**

Since 1890, Mumbai Army of 5,000 Dabbawalas fulfilling the hunger of almost 200,000 Mumbaikar with home-cooked food that they lug between home and office daily their core service is **Dabba delivery i.e. delivering home cooked food from your house/mess to your work place.**

Our Belief WORK IS WORSHIP

Tiffin Basket's weight: 60-65 kgs.

SPECIAL FEATURES OF DABBAWALA'S SERVICES
 Zero % fuel - Pollution Zero % investment
 Zero % modern tech. Zero % Disputes
 99.99% performance 100 % Customers Care & Satisfaction



VI. Mumbai Dabbawalas operate pan Mumbai from **Virar to Churchgate** and **from Ambernath to Dadar**. It's not as simple as it sounds, Battle with time and weather our day ends with an emotional satisfaction and happiness because we firmly believe in the philosophy of “**Anna daan is mahadaan**”(Donating food is the best charity)

No worries if you are not from Mumbai, No worries if there is no one at your house to cook food for you. They have the solution for all food related issues because we love foodies, moreover they love vegetarians! They provide healthy home cooked food straight away from their kitchen to your table which would be appealing to your eye & to your palette too. Be it Dal or be it a gravy, our food is prepared under hygienic conditions using refined oil which best takes care of your heart, because for us your little heart is utmost important. So the struggle for healthy food gets over, Contact **Mumbai Dabbawalas** for wide variety of options.

VII. Corporate Culture: Most tiffin-wallahs are related to each other, belong to the Varkari^[16] sect of Maharashtra,^[17] and come from the same small village near Pune. Tiffin distribution is suspended for five days each March as the tiffin-wallahs go home for the annual village festival.^{[18][19][20][21][22]}

VIII. Movies: The 2013 Bollywood film The Lunchbox is based on the dabbawala service.

Supply Chain Excellence :

IX. Six Sigma Performance: In 1998, Forbes Global magazine conducted a quality assurance study on the

Dabbawalas' operations and gave it a Six Sigma efficiency rating of 99.999999; the Dabbawalas made one error in six million transactions. 6-Sigma refers to a quality improvement and business strategy concept started by Motorola in the United States in 1987. In statistical terms, 6-Sigma is the abbreviated form of 6 standard deviations from the mean, which mathematically translates to about 3.4 defects per million.



Working of NMTBSA

- Error Rate : **1 in 16 million transactions**
- Six Sigma performance (**99.999999**)
- Technological Backup : **Nil**.
- Cost of service - **Rs. 300/- to 350/-** month (**\$ 6.00/month**)
- Standard price for all (**Weight, Distance, Space**)
- **Rs. 36 to 40 Cr.** Turnover approximately.
- **"No strike"** record as each one a share holder
- Earnings - **Rs. 5000/- to 6000/- per month**.
- Diwali Bonus: **One month's extra payment** from customers.

X. Discipline:

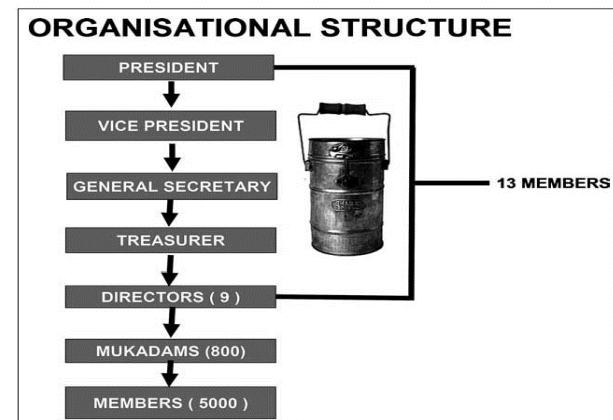
- **Reporting to duty on time.**
- **Behave properly.**
- **Respect the customers.**
- **No alcohol drinking during business hours.**
- **Wearing white cap during business hours.**
- **Carry identity cards.**

XI. Latest Marketing Strategy: Marketing pamphlets in the "Dabba". Star TV hired the services of Dabbawalas to distribute the pamphlets of **Amitabh Bacchan** anchored "KBC" reaching **2 lakhs Mumbaikars in just 4 days**. Maharashtra government propagates HIV awareness through Dabbawalas channel. Campaigns done for many companies in Mumbai. Dabbawalas are the fastest and most economic method to reach the **nook and corner of Mumbai**. This brings additional earning for Dabbawalas.

XII. Organisational Structure & Working Style: The **Nutan Mumbai Tiffin Box Suppliers' Charity Trust** had a very flat structure with only three levels, the Governing Council, the Mukadams and the Dabbawalas. From the Governing Council, a president, a vice president, a general secretary, a treasurer & directors were elected. The Governing Council held meetings once a month which were attended by the Mukadams (Supervisors) and Dabbawalas. At these meetings, the Dabbawalas discussed their problems and explored possible solutions. The problems could be with the police, Municipal Corporation, customers, etc. They also adjudicated disputes among Dabbawalas using their

own system. The Trust collected Rs.15 from each Dabbawala every month to maintain a welfare fund.

XIII. Organisational Structure of NMTBSA



XIV. Supply Chain of Dabbawala: A collecting dabbawala, usually on bicycle, collects dabbas either from a worker's home or from the dabbamakers. As many of the carriers are illiterate, the dabbas have some sort of distinguishing mark on them, such as a colour or group of symbols.

The dabbawala then takes them to a designated sorting place, where he and other collecting dabbawalas sort the lunch boxes into groups. The grouped boxes are put in the coaches of trains, with markings to identify the destination of the box (usually there is a designated car for the boxes). The markings include the railway station to unload the boxes and the destination building delivery address.

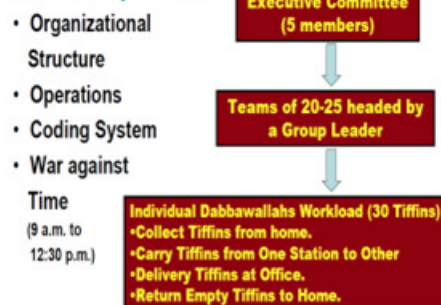
At each station, boxes are handed over to a local dabbawala, who delivers them. The empty boxes are collected after lunch or the next day and sent back to the respective houses.

Organisational Structure of NMTBSA

Case Study: NMTBSA

Nutan Mumbai Tiffin Box Suppliers Association

How do they do it ...?



XV. Supply Chain of NMTBSA

CODING: Lunch boxes are usually marked in several ways:

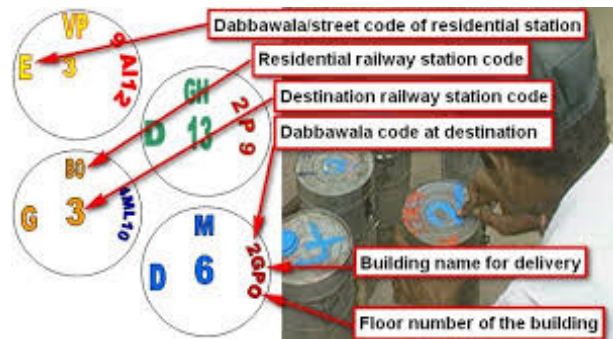
- (1) **abbreviations for collection points,**

(2) colour code for starting station,

(3) number for destination station and

(4) markings for handling dabbawala at destination, building and floor.

The dabbawalas have started to embrace technology, and now allow for delivery requests through SMS. A colour-coding system identifies the destination and recipient.

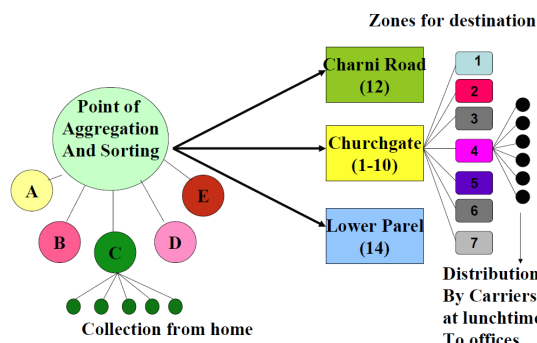


Coding System

- VLP** : Vile Parle (suburb in Mumbai)
- 9EX12** : Code for Dabbawalas at Destination
- EX** : Express Towers (building name)
- 12** : Floor no.
- E** : Code for Dabbawala at residential station
- 3** : Code for destination Station eg. Churchgate Station (Nariman Point)



The Flow Logic



XVI. Uninterrupted Services: The service is almost always uninterrupted, even on the days of severe weather such as monsoons. The local dabbawalas and population know each other well and often form bonds of trust. Dabbawalas are generally well accustomed to the local areas they cater to, and use shortcuts and other low profile routes to deliver their goods on time. Since 1890, when the dabbawalas formally came into existence, none of them had ever gone on strike until 2011 when the members decided to head towards Azad Maidan to support Anna Hazare in his campaign against corruption.

XVII. Economic Analysis: Each dabbawala, regardless of role, is paid about eight thousand rupees per month. One month's Diwali bonus from customers. **The New York Times reported in 2007** that the 125-year-old dabbawala industry continues to grow at a rate of 5–10% per year. Zero % fuel, zero % investment, zero % modern technology, zero % disputes, **99.9999% performance & 100 % customer satisfaction.**

XVIII. SWOT ANALYSIS:

STRENGTHS:

100% Achievements in-

- Teamwork, discipline, honesty
- Time management
- Ownership & Pride in work
- Customer satisfaction
- Low operational cost, process consistency
- Service delivery of six sigma
- Service commitment (No strike since inception)
- Satisfaction of team member (due to low attrition)
- Full proof delivery model through colour coding
- Financial independence.
- Just in time approach

0 % dependence upon-

- Fuel in last mile service delivery
- Technology related process complexities
- Investment
- Documentation

WEAKNESS:

- Highly dependent on Mumbai local trains
- Limited fund flow of the association limits the governing body to implement welfare schemes
- Limited Access to Education, limit diversification of members to other business jobs

OPPORTUNITY:

- Tie up with caterers to serve variety of meals i.e. diet food, Chinese/continental food, food for fasting
- Opportunity on the expansion of services on the routes of Mumbai metro & BRTS
- Generating revenue by promotion of other brands
- Expanding networks in other cities
- Booking of service through internet & SMS

(Recently started – needs to be popularized)

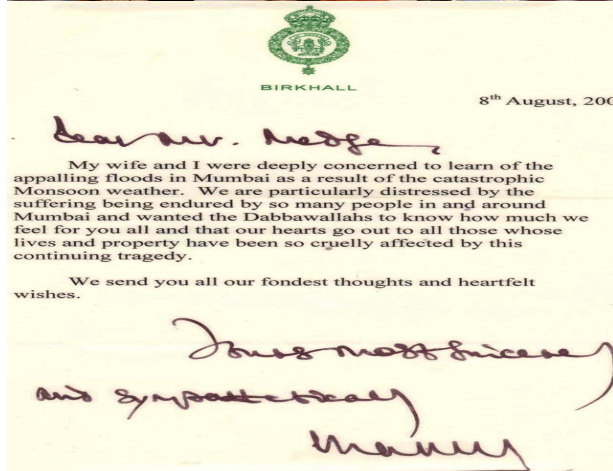
THREAT:

- Threats from fast food joints & small restaurants
- Flexi – timing \ work from home culture
- Food courts at mall \ mega structures
- Catering services offering tiffin services
- Paper food vouchers & smart cards i.e. food plus by HDFC

Competitors : The major competitors of Mumbai dabbawala are Magic-o-meal, Food plus by HDFC, Fast Foodchains, restaurants, road-side vendors, Udipi chain, food box etc. Competition is different here no manufacturing, only distribution.

But, Home food – The USP of Dabbawala nullifies the threat.

XIX. AWARDS AND FELICITATION:



1. **CASE STUDY – ICAFI Press Hyderabad & Richard Ivey School of Business –Ontarion, Harvard Business School.**
2. Documentaries made by **BBC ,UTV, MTV, ZEE TV, AAJ TAK, TV TODAY, SAHARA SAMAY, STAR TV, CNBC**
3. **TV 18, CNN, SONY TV, TV TOKYO, NDTV.**
4. Included in a subject in **Graduate School of Journalism University of California, Berkeley.**
5. Invited for the Terra Madre World meeting of food communities in Italy between October 20-23, 2004.
6. Invited to **marriage of Hon. Price Charles of England** on 9, April 2005.
7. Invitation **from CII for conference held in Bangalore, IIML, IIMA, CII Cochin, CII Delhi, Dr. Reddy's Lab.,**
8. Foundation Hyderabad, SCMHRD Pune, SCMHRD Nasik, Sadahana –Poone.
9. Name in **“GUINNESS BOOK of World Records”.**
10. Part of the **“Community of Cooked Food distributors from Mumbai”.**
11. Radio – German Radio Network, **Radio Mirchi, Radio Mid-day, FM –Gold, BBC Radio.**
12. Registered with Ripley's **“believe it or not”.**
13. Shri.VarkariPrabhodhanMahasmatiDindi (palkhi) sohala–4th march –2001.
14. **World record in best time management.**

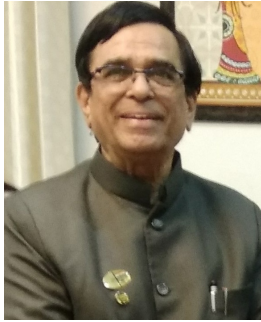
XX. Conclusion: In this highly technologically advanced time ‘dabbawalas’ are working absolutely without

technology. They have an excellent supply chain, despite the fact that they don't even know what it means. Most of the people working with them are semi-literate but still they read the tiffin code correctly and deliver it. Their attitude of competitive collaboration is equally unusual, particularly in India. Their excellent sense of deep commitment, sense of work ethics and unparalleled time management system are best in place.

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INVENTORY REDUCTION TARGETTED STRATEGIES - FOR SUPPLY CHAIN PROFESSIONALS / MANAGERS

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INTRODUCTION/ BACK DROP: In the, on date back drop of pandemic COVID19 situations, SCM functions are becoming tough to go with needs of all sectors for different reasons, as known. One main area will be Inventory management and Inventory reduction to keep the grip on cost control, spends, profit etc. So, we deal herein "Inventory reduction targeted Strategies "for SCM Professionals / Managers". Inventory management plays a crucial role in balancing the advantages and disadvantages associated with Inventory holding.

Inventory comprises an important part of assets, particularly in manufacturing industry. A lot of cash flow is committed to inventories so as to ensure a smooth flow of production to meet a demanding customer service level. However, maintaining inventory also involves holding or carrying costs along with opportunity cost. Therefore, identifying inventory reduction strategies becomes critical for supply chain and operations professionals.

WHAT ARE THOSE INVENTORY REDUCTION STRATEGIES- TO IMPROVE INVENTORY TURNS: 18, Of them are dealt here under:

- 1. Total Supply Chain Lead time Reduction:** A reduction in total supply chain lead-time will lead to products / materials not being held in stock for a long time. Both a reduction in supplier lead-time and manufacturing lead-time will contribute to inventory reduction. To reduce lead-time the throughput, WIP and cycle time will need to be measured in order to get a realistic estimation of a reduction in lead-time. This in turn will reduce the risks related to holding inventory for longer periods of time. The easiest way to understand total supply chain time is to perform high-level supply chain mapping. Starting from upstream of supply chain and map out the average lead-time to downstream of supply chain.
- 2. Manufacturing Lead Time Reduction:** It is always seen a lot of focus in reducing the total supply chain lead-time and/or supplier lead-time, there is, however, not enough focus in reducing the internal manufacturing lead-time. When considering the planning method in use, one should consider manufacturing lead-time in the total planning lead-

time. Practically, this is one of the difficult inventory reduction strategies to implement.

The Best way to know, the actual Manufacturing lead-time is to allow Lean Experts in business to perform the Value Stream Mapping. And to work with production team to reduce this manufacturing lead-time.

- 3. ABC Analysis to Identify MTS(Made To Stock) / MTO(Made To Order) Changes :** ABC analysis will help to determine which inventory is used most often. In very simple terms A is the inventory that is used the most, B- product that are important but are used less frequently and C these are products that are rarely used. "A" classification products are ones that are used frequently and can therefore be ordered in a small quantity, or be delivered Just in time and will require less safety stock, and C products can be ordered less frequently but with more safety stock kept. In my experience this is the most effective method of inventory reduction and fast.

The biggest benefits of ABC analysis are to identify Made to Stock (MTS), Assemble to Order (ATO) and Made to Order (MTO) items. Since A items are runner and repeaters, they should be MTS items with adequate safety stock. B items can be treated as ATO by only carrying raw materials in stock and C items should MTO. This is a must-have initiative for any business to devise inventory reduction strategies.

- 4. Supplier Rapport- Improvement:** Having an improved relationship with suppliers is highly beneficial not only to the whole supply chain but also with inventory reduction. Having a rapport with the supplier will mean that communication between the parties is effective. The suppliers have the best knowledge of product they produce and this can be utilized with a good rapport as this information can be shared. By having a good relationship with the suppliers, communicating will be easier and will also help to get supplies, meeting to our regular needs/ unexpected needs during breakdowns.
- 5. Order Size to be small:** Ordering a smaller volume

of inventory, more frequently is beneficial for the company to manage cash flow and also inventory reduction. Depending on the product this will reduce costs associated with keeping a higher volume of inventory. As a result the inventory on hand will be low but the frequency of replenishment will be higher. Having less inventory reduces several risks associated with keeping inventory e.g. issues that can cause a product to depreciate in value.

6. **Obsolete Stock Reduction:** By identifying, repurposing or removing obsolete inventory, the volume of inventory on hand will decrease. With this, both direct and indirect costs of keeping the obsolete inventory will be reduced. This closely links for reducing order sizes as a smaller volume of the inventory will be in stock and as a result, fewer inventories will be in stock to become obsolete. Moreover, you can download Excess and Obsolete Policy guidelines for adjustments, disposition, inventory valuation, and reserves.

7. **Safety Stock Review – to be conducted regularly:** Once Made to Made-to-Stock (MTS) items have been identified post-ABC Analysis, planners should review the safety stock every 6 months (may be every 3 months in some cases) as a minimum as one of the most essential inventory reduction strategies.

As we know, the safety stock is employed to absorb lead-time variation and demand variation of customer demand and achieve required service level (95% in most cases). Maintain and review of safety stock is paramount factor to achieve the right customer service levels and market lead times, hence it is an action of strategic importance.

As known, the review of safety stock goes hand in hand with ABC analysis. Once safety stock is changed, one should be able to forecast the increase or decrease in stock based on forward demand/forecast and track “planned” vs. “actual” impact to include in inventory reduction plan. Like ABC analysis this exercise again is one of the key activities out of all inventory reduction strategies in scope

8. **Check Aging and Reach of Stock (ROS), for inventory:** One way to find out what inventory to target is understand what items are being carried for more than 12 month old, meaning, they are not turning faster and need special focus actions to reduce them.

Reach of stock is a simple analysis, which identify as to how many days certain stock inventory will last based on historical demand.

9. **Measure each Planner / Buyer, individually with Clear Ownership:** It is not uncommon that inventory as balance sheet items is driven by

finance. However, in reality, the inventory is owned by Supply Chain; therefore, supply chain team(s) should drive inventory action and ensure realistic targets are set.

Generally, inventory is assigned to a plant and owned by a Supply Chain team with support from finance. Therefore, it is more that each planner and buyer should have their own individual targets for the production cells they are planning or buyer for raw materials inventory from 1st or 2nd tier supplier.

10. **Inventory Self Audit / Assessment – To be Conducted:** When inventory is out of control it is worthwhile exercise to conduct the Inventory Self Audit or Assessment.

11. **Using technique of Pull Based Demand / Replenish Based Demand (PBD / RBD):** A way for inventory reduction is by having a pull based demand system or JIT system. This means to only manufacture the product once it has been made therefore reduce the risk of obsolete stock as all the materials ordered are being used to make the product. This is different from making a product then selling it therefore as the demand is not certain, this will make forecasting easier. Therefore reducing inventory as it is only ordered when it is needed (this needs a good supplier rapport and short lead time.)

12. **More Accurate Forecasting:** Having a standardized reliable way of forecasting demand will mean that excess stock is not ordered and will reduce the chance of obsolete stock. Utilizing all the data available and using up-to-date technology can help with reductions. Having a more streamlined supply chain with information being passed along and shared can also increase the chance of a better forecast.

13. **Reduce SKU (Stock Keeping Unit) or Delayed Differentiation(Postponement):** Reducing the number of SKU's in a range will mean less of the differentiated products will be produced and allow the benefits of manufacturing homogenous products.

However this reduction can be difficult but a way of reducing the costs that are associated with the differentiation e.g. machine is reconfigured with a new set of algorithms in order to facilitate for the new product, this will save time but another way to diminish the cost would be by delaying the differentiation process to as far down the line as possible so as to not to cause a disruption to the other products in production.

14. **Better Measuring System:** Implementing a system that will recognize when a product needs replenishing and is dynamic can also be useful. Using a system that can change how much to order

not only by using how much current stock is on hand but by also a change in trends will help reduce the chance of obsolete stock and excess stock.

15. Use of more Versatile components: Using a material or component that is versatile will result in inventory reduction. Ordering a material that can be used in many different products can reduce the inventory on hand. This is because the one material can go into several products. If the material has a high inventory turnover then it can be ordered in a smaller quantity often as above.

16. Highest spend supplier should be on VMI (Vendor Managed Inventory) or Consigned Inventory Programs: Move inventory upstream in supply chain by using Vendor Managed Inventory (VMI) or Consigned Inventory Program. With Strategic suppliers who supply high value, volume and frequency items can keep minimum and maximum stocks, as long as the liability of that inventory is covered. That means one can simply cut the manufacturing lead-time and pull from stock, in turn reduce safety stocks and/or cycle stocks. This is, one of the impactful inventory reduction strategies.

17. To Focus on TOP 50 high Value inventory items: As per experience , between 20%-25% inventory sits with Top 50 high value inventory items (it will vary with different business). So it is essential, management to advice material planners to focus on those and “micromanage” them and for rest they can use MRP and Parameter setting. And by applying one or more of the other inventory reduction strategies mentioned herein, can aim to reduce significant amount of inventory related to these Top 50 high value inventory items and ease up cash flow to some extent.

18. Drive Standard Cost Reduction, to Lower Gross Inventory Value: In most business, they reduce cost of unit price to focus to increase profitability. This drive of cost reduction mostly ends up in reduction of unit price, which in turn has a positive impact in the inventory valuation. In business, where standard cost changes only once in a year, it has to be ensured that the financial controls are on your side to reflect the cost reduction in unit price. Therefore, in-house inter relationship with financial controllers is a must-have for implementing inventory reduction strategies.

CONCLUDING THOUGHTS :

In this situation of pandemic COVID19 era, all SCM managers to concentrate on Inventory reduction aspect, matching to management’s approach to reduce all spends, to take care of profit margins, retaining working crew in all departments, coinciding with manufacturing programs, pending orders execution etc.

A consistent use of these inventory reduction strategies over the next few months will help the business to remain competitive and decrease inventory, while reducing operating costs and improving customer service / customer satisfaction.

In addition, the inventory management strategies will augment business operations by the effective and efficient flow of goods and services. It adds to profitability, competitiveness, service optimization and market diversification.

(Ref.: internet down the line discussions/research papers/self experience.)

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COMMODITY INDEX

Commodities	Days's Index	Prev. Index	Week Ago	Month Ago
Index	3098.8	3102.6	3114.5	3126.7
Bullion	7704.3	7669.9	7704.8	7757.6
Cement	2397.3	2480.6	2480.6	2547.5
Chemicals	1448.4	1448.4	1490.4	1600.4
Edible Oil	2244.5	2217.3	2168.7	2076.9
Foodgrains	2227.2	2232.1	2226.3	2209.9
Fuel	2931.2	2943.7	2968.7	2969.8
Indl Metals	1919.1	1919.1	1919.1	1919.1
Other Agricom	2356.9	2356.9	2359.1	2362.6
Plastics	1581.6	1581.6	1631.0	1631.0

Source: ETIG Database dated 17th September, 2020

HUB EDGE AND SPOKE IN SUPPLY CHAIN

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Spoke hub is a distribution network and is a system of connection arranged like a wheel, which all traffic moves along the spokes connected to the centre with an investment with several part of supply chain which remains individually managed to pool the assets together by contributing on to the centre.

Hub and Spoke distribution is a form of transportation, which optimizes in which traffic routes are organized as a series of spoke, that connect on to lying points to a central position, as a simple form of the distribution or connection which may be contrasted with point to point system, in which each point has a direct route to every other point which have a principle method of transporting products, and freight from the hub and spoke.

In the concept of air cargo the Hub and Spoke simplifies the route network significantly, and there has been cost reduction in ensuring full cargo in supply chain, under Hub and Spoke, and deliveries go through a centralized distribution. Hub and Spoke supply chain, strategically located resulting in route map, of Spokes with Hub as the centre, it is suggested that Hub and Spoke system in a supply chain is that all consignments or packages should be dispatched to a centralized distribution centre Hub initially.

Edge in supply chain found to be the most pressing challenge in supply chain, with hands on experience, so as to delivery profit, enhancing the earnings before interest, tax, depreciation, amortization with analyzing the organization profitability bringing in efficiency in supply chain.

Effective supply chain with Edge facilities, bring in the strategies not only to help organization to improve the efficiency, control costs, mitigate risks, enable to deliver value to customers. Supply chain strategy adopted by leading supply chain challenges longer lead time, managed by collaboration across supply chain are some of the important issues with responsibility to a number of challenges adoption of digital technology, vertical integration, localization, of materials components, are some of the most important strategies in supply chain. The transporter collects the cargo from the point of origin, and transports the cargo, and is shipped to a

central processing unit, which is called the Hub, and the shipment is sent to warehouse, or distribution centre, from the place of the of the network.

The advantage of Hub Edge Spoke system is the improved shipment tracking when the materials or package, are shipped directly from the place of warehouse, and if there found to be far too many routes connects them to a vast network of centre's, since monitoring such shipment is more complete, but they speed up deliveries and reduce costs.

Hub Edge Spoke, with the best practices of Enterprises Resource Planning, suited to ensure smooth implementation, strategy, can enable multi-resistance driving business process, efficiencies, improving competitiveness, lower costs, in supply chain.

Hub Edge Spoke, creating merger and acquisition, deals set up, out ventures, build new factories, setting up sales operation, bringing business process, standardization, accepting in-house process, each unit in supply chain.

Hub Edge Spoke is a centralized network integrated logistic system, demand to keep costs down, as the Hub Edge Spoke distribution centers, are distribution centers for manufactured products, placed for different destination, either by rail, road, air, so as to coordinate with different Hubs, Spoke centers, in supply chain.

Hub Edge Spoke in supply chain is considered to be highly efficient, sometimes fragile, targeted to risk, as the Hub Spoke disconnects the network, with the proximity of Edge, and may not be sometimes be suited for distribution systems in supply chain.

Supply chain is sometimes induced with transportation system, road, rail, air, with good connectivity, of Hub, Edge Spoke, and connection structure. In supply chain network are efficient, sometimes destroys the connection, and breaks the network, as Hug Edge Spoke captures, the basic structure under the transportation modes, rail, road, air in supply chain.

Hub, Edge Spoke is to stay competitive globally in supply

chain, to remain with cutting edge, in a complex supply chain, with incorporating more technology, into supply chain, managing systems in supply chain juncture at the present situation. Supply chain Hub, Edge, Spoke consumers have become increasingly, demanding setting the expectations with high quality service in supply chain, at the same time Hub Edge Spoke is able to realize the use of latest technology, can ensure better accountability visibility allowing supply chain to be accessible to maintain tighter control ahead of supply chain.

Supply chain dynamic order levels to place order, should be able to split the ordered items into Hub Spoke, so as to process them separately with Edge cutting facilities. The items of Hub are combined to the Spoke facility, where the order is combined, and then delivered or distributed in one lot for shipment or distribution. Supply chain implementation to have stock level of the items, to be maintained, so also to maintain the implementation of service levels of the stock, with the assistance of Hub Edge Spoke level in supply chain.

Supply chain reasons for complexity in procurement, is the failure to implement, cross-functional strategy with different aspects of procurement process, as procurement function works in connection with other logistic function, sales, marketing, finance, administrations', warehouse, manufacturing, as the entire process becomes continuous, in supply chain. Hub and Spoke helps organization to build a successful procurement strategy in integrating all functions of procurement to be a Central Hub, as it is able to be responsible for the working in the organization, so as to influence, manage the strategic processing the building of the organization, collaborate, approach the operational elements in supply chain.

Supply chain Central Hub in procurement is to develop the strategic skills, services, bringing equilibrium in procurement process. The strategy of the process will bring in coordinate across procurement value chain, resulting in significant efficiencies, bring information sharing collaboration, market analysis through Hub, Edge, Spoke in supply chain.

Supply chain Hub and Spoke procurement will be able to exchange information, work collaborate with Central Hub in procurement, so as to gather information, improve, reporting, order processing, analyze, the information in sourcing, so as to bring visibility in contract process, supplier risk, opportunities to spend more time in eliminating frequent intervention, from the multiple location in procurement, of the same organization. Hub, Edge, Spoke will review transactions data, as procurement will be able to retain control on

developments, manage customers, suppliers, enabling to make strategy decisions, at appropriate times in supply chain.

Supply chain logistics have evolved from traditional organization, into full fledged, logistic service provider, which offers various service, such as transportation, warehouse, value addition, in which Hub Edge Spoke play an important role in supply chain.

Warehouse has emerged as a concept for 3PL logistic organization, provide outsourced as logistic, to third logistic party. The emergence of the concept of third party logistic has provided a specialized integrated operation, warehouse, transportation, service at Hub, Edge Spoke service, that can be scaled as customer based on market conditions that demand better delivery service requirements for the products, materials, in supply chain.

Supply chain with increased support improved market grouping, better FDI regulation, with growing, consumptions levels, has become a major driver for Hub Edge Spoke in logistic market in supply chain.

Outsourcing of manufacturing, activity has been on the rise in many organization, with the entry of Global organization, development of improved international trade activities, increasing, market optimization, changing customer market sophistication, global competition, Hub, Edge, Spoke global competition are put on pressure, to manufacture better products, goods, products at lower cost, to customers in supply chain.

Transportation, warehouse, distribution, are critical, Hub Edge, Spoke components in the entire supply chain, with manufacturing capacity, increasing at the present pace, with logistic equally gaining equal importance, in order to provide better service at lower cost in supply chain.

Supply chain delivery of products is the most cost-effective timely means possible forward thinking logistic organizations, that embracing, Hub Edge, Spoke methods to the places connected in supply chain.

Supply chain delivery of products with multiple orders to be delivered across multiple locations, from end to end is considered to be not an easy proposition in supply chain, due to various constraints, such as traffic, time based deliveries. Supply chain Hub, Edge, Spoke, allows delivery organization to plan the daily delivery routes, from one Hub to complete the deliveries, to a particular region, the move to another Hub for onward demand to additional delivery in supply chain, as it improves productivity to meet the service levels

effectively, efficiently in supply chain.

Supply chain usage of Block Chain in Hub Edge Spoke consequences, for a real time visibility, of the supply chain, is to ensure the trust authenticity in the transaction, across the Block Chain, as it considers the movement, for supply chain, network, with greater tracking, of inventory, assets, purchase orders, shipment, in supply chain. By linking movement, of physical goods through Hub, Spoke with serial numbers, bar codes, digital, tags, Radio Frequency Identification, sensors, also recording the transaction through the Edge of Block Chain activities, is considered to verify the certification prospects of the process, at any given time, also to trace the source of the process in supply chain.

Supply chain sometimes lacks consistent in data digital capabilities, sharing information through Hub Edge, Spoke may be difficult, but with the use of Block Chain, Internet of Things, Machine Learning, can help to promote transparency of Hub, Spoke, to streamline the process, sharing information as this improves the transparency, accountability trust, in supply chain. Supply chain depending upon the tendencies of governance, the network is expected to be delivered used in supply chain.

Hub, Edge Spoke with the changing process in Internet of Things, inventory, logistic manufacturing, provided by technology, such as intelligent Robotic Sorting, AI powered, visual inspection, are transforming warehouse management, shipping, tracking, logistic, packaging, as is supervised by the Hub, Spoke reinforced by learning, technology facilitating, decision making enhanced with fraud detection in the form of forklifts, automated sorting, self-managing inventory systems, warehouse, logistic, distribution, inventory management, additionally with the help of intelligent software, enabling supplier selection, product design, evaluations, production planning B2B sourcing have Edge in supply chain.

Hub Edge Spoke with Internet of Things, transportation, enabled sensors to track shipment monitor temperature. Data is then sent to a centralized control tower, providing real-time updates on the location of the shipments, its estimated arrival time, allowing operations to be monitored by sensors to ensure security in Hub and Spoke with sensor technology becoming more cost-efficient, with wireless connectivity in increasing in internet of things network with Edge in supply chain.

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HOW CAN DATA IMPROVE SUPPLIER DECISIONS

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A growing trend across all industries has been the application of big data, with the use of algorithms and the hiring of data scientists becoming commonplace. As businesses collect and store an ever-increasing amount of data, the algorithms required to make sense of this data will become even more valuable. This is due to the fact that algorithms can take any number of factors into account and provide unbiased insights into variation. The transportation and logistics industry has mountains of data available, and experts encourage carriers and their customers to embrace data backed business decisions.

Data Cleansing

In order for data to be used in the decision making process, companies must ensure that they are using high quality data in their analysis. Although the availability of supply chain data is increasing by a factor of 10x each year, a large quantity of data alone provides limited value for business analytics. Prudent companies should utilize a process for correcting, and removing, errors and inaccuracies from data sets as well as addressing any recurring data issues. This process is referred to as 'data cleansing.'

Once your data is clean, the true impact of algorithms can be felt, as algorithms "make it easier for us to see the invisible" says Jim McGinness, regional head of Panalpina. Even with the use of algorithms, business analytics must remain collaborative. This means sitting down with various stakeholders, colleagues, management, customers, etc., – and discussing the use of big data for business analytics and how the results affect each stakeholder. Discussions such as these will allow companies to use data to achieve their internal and external goals.

Algorithms : While many businesses embrace data analytics as a valuable, strategic asset, others are unsure of how analytics can transform their processes. One of the major applications will be allowing shippers to detect patterns and understand the deeper nuances of working with various carriers. Luckily, today's "automated algorithms can identify patterns and provide insights" into carrier safety, pricing trends, carrier capabilities, and innovation. Using algorithms, shippers can understand which suppliers truly align with their company's goals and/or are the best fit for the job at hand.

In the transportation and logistics industry algorithms will begin to enable human decision makers to make better and faster decisions by performing valuable analysis. Despite all the data collected, it only becomes useful when businesses use data to drive purchasing behavior and improve processes. The companies that can collect, organize, and apply this data will hold a strategic advantage in the coming years.

Source : www.supplychainminded.com

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MULTI OBJECTIVE OPTIMIZATION ON THE BASIS OF RATIO ANALYSIS

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A . Introduction : Performance evaluation and monitoring of suppliers who supply the organizations with the necessary raw material, components and services for the production of end-items, is one of the critical responsibilities of purchasing managers of organizations. Commodity partnerships that are exclusively based on price are no longer acceptable for suppliers of critical inputs and resources or for organizations introducing and practicing the latest innovations. Recent emphasis in managing these inter-organizational relationships has extended to include other important factors such as quality, delivery, flexibility etc. thus, there continues to be a need for robust evaluation models that effectively incorporate supplier criteria.

The fact that supplier selection is a multi-criteria problem which includes both qualitative and quantitative factors makes the process even more crucial. In order to select the best supplier it is necessary to make a trade-off between those tangible and non-tangible factors some of which may conflict. Supplier selection and evaluation are arguably one of the most critical functions for the success of an organization. Research shows that higher levels of customer satisfaction, i.e., competitive pricing, product quality, product variety and delivery service; and firm performance result from selecting and evaluating suppliers based on their ability to provide quality components and subassemblies, reliable delivery and product performance. Thus, supplier selection decisions are an important component of management. These decisions are complicated because potential options need to be evaluated on more than one criterion. The evaluation element typically consists of identifying the attributes or factors that are relevant to the decision and then measuring or rating each supplier by considering each of the relevant factors. But, the problem arises when these factors are conflicting to each other. That is why fuzzy multi criteria decision making (FMCDM) has a role to play in order to select the alternative suppliers. The objective of this article is to enhance evaluation and selection methodology and to propose an alternative approach by applying fuzzy multi objective optimization on the basis of ratio analysis (MOORA). It is also proved that fuzzy MOORA method is a simple, accurate and easy to understand tool for solving multi criteria decision making problems,

having vague and imprecise evaluation data.

It was developed by Brauers & Zavadskas (2006). The technique can be successfully applied to solve various types of complex decision making problems including the following:

- Contractor Selection
- Optimisation of machinery process parameters
- Supplier Selection
- Material Selection
- Composite Material Selection
- Sustainable Reserve Logistics
- Site Selection for car sharing station
- Occupational health and safety risk analysis.

B. Methodology : MOORA is an objective multi-criteria method used to solve various problems related to decision making. MOORA method also known as multi-attribute optimization is the process of concomitantly two or more attributes subject to certain limitations. The MOORA method has simple mathematical calculations and is easily understood systematically.

The method starts with a matrix of responses of different alternatives to different objectives:

$$X = \begin{matrix} & \text{50eÜ}_{11} & \text{50eÜ}_{12} & \text{50eÜ}_{150\text{VÜ}} \\ & : & : & : \\ \text{50eÜ}_{50\text{WÜ}1} & \text{50eÜ}_{50\text{WÜ}2} & \text{50eÜ}_{50\text{WÜ}50\text{VÜ}} & \dots\dots\dots (1) \end{matrix}$$

where, x_{ij} is the response of alternative j to objective i , $i = 1, 2, \dots, n$ are the objectives, $j = 1, 2, \dots, m$ are the alternatives.

MOORA refers to a ratio system in which each response of an alternative on an objective is compared to a denominator, which is representative for all alternatives concerning that objective. For this denominator the square root of the sum of squares of each alternative per objective is chosen:

$$N x_{ij} = \frac{x_{ij}}{\sqrt{\sum_{j=1}^m x_{ij}^2}} * w_j$$

(for making normalised weightage matrix)..... (2)

with:

x_{ij} = response of alternative j to objective i , $j = 1, 2, \dots, m$; m the number of alternatives, $i = 1, 2, \dots, n$; n the number of objectives,

Nx_{ij} = a dimensionless number representing the normalized response of alternative j to objective i ; these normalized responses of the alternatives to the objectives belong to the interval $[0; 1]$.

For optimization, these responses are added in case of maximization and subtracted in case of minimization:

$$Ny_j = \sum_{i=1}^{i=g} Nx_{ij} - \sum_{i=g+1}^{i=n} Nx_{ij} \dots\dots\dots (3)$$

with:

$i = 1, 2, \dots, g$ for the objectives to be maximized, $i = g + 1, g + 2, \dots, n$ for the objectives to be minimized, Ny_j = the normalized assessment of alternative j with respect to all objectives.

In this formula linearity concerns dimensionless measures in the interval $[0; 1]$. An ordinal ranking of the Ny_j shows the final preference.

C. Explanation

The management has short listed 7 materials for manufacturing equipment. These alternative materials & their properties are given in decision matrix form (Table -1).

Material	SH	CH	SFL	BFL	UTS	C
Material -1	220	220	460	360	880	0.7
Material -2	200	200	330	100	380	0.35
Material -3	270	270	630	435	590	0.25
Material -4	270	270	670	540	1190	2.5
Material -5	585	240	1160	680	1580	6.5
Material -6	700	315	1500	920	2300	5.0
Material -7	750	315	1250	760	1250	9.5
Beneficial (Y) or Non-Beneficial (N)	Y	Y	Y	Y	Y	N
Selection Weightage %	0.13	0.25	0.2	0.17	0.1	0.15

Table -1

- Surface hardness (SH) in BHN
- Core hardness (CH) in BHN
- Surface fatigue limit (SFL) in N/mm^2
- Bending fatigue limit (BFL) in N/mm^2
- Ultimate tensile strength (UTS) in N/mm^2
- Cost(C) in Rs/Kg

In the above table, beneficial attributes data is given (Minimum or Maximum) because each criteria has an important role. Also, depending on the importance weight value to the ranking needs of the highest criteria to the lowest which if the entire amount of weight added criteria will produce a value equal to 1 (one).

Normalization aims to merge each matrix element so it's have a similar value. Normalization is done by dividing the value of a data with the root of the sum of the squares of data in one criterion, in Table 2:

Material	SH	CH	SFL	BFL	UTS	C
Material -1	0.172	0.314	0.183	0.227	0.254	0.055

Material -2	0.157	0.286	0.131	0.063	0.110	0.027
Material -3	0.212	0.386	0.251	0.275	0.170	0.019
Material -4	0.212	0.386	0.266	0.341	0.343	0.195
Material -5	0.458	0.343	0.461	0.429	0.456	0.507
Material -6	0.548	0.450	0.596	0.581	0.663	0.390
Material -7	0.588	0.450	0.497	0.480	0.360	0.741
Beneficial (Y) or Non-Beneficial (N)	Y	Y	Y	Y	Y	N
Selection Wt %	0.13	0.25	0.2	0.17	0.1	0.15

Table -2

After normalizing, multiply each data by the weight of each criterion, in **Table-3**:

Material	SH	CH	SFL	BFL	UTS	C
Material -1	0.022	0.079	0.037	0.039	0.025	0.008
Material -2	0.020	0.071	0.026	0.011	0.011	0.004
Material -3	0.028	0.096	0.050	0.047	0.017	0.003
Material -4	0.028	0.096	0.053	0.058	0.034	0.029
Material -5	0.060	0.086	0.092	0.073	0.046	0.076
Material -6	0.071	0.112	0.119	0.099	0.066	0.058
Material -7	0.076	0.112	0.099	0.082	0.036	0.111
Beneficial (Y) or Non-Beneficial (N)	Y	Y	Y	Y	Y	N

Table -3

Normalized measurements are added in the case of maximization (for beneficial attributes) and reduced in minimization (for non-beneficial attributes) or reducing the maximum and minimum values in each row to get rankings, in Table-4:

Material	Y_j	Rank
Material -1	0.193	6
Material -2	0.136	7
Material -3	0.235	5
Material -4	0.240	4
Material -5	0.280	3
Material -6	0.410	1
Material -7	0.295	2

Table -4

D. Conclusion

Decision-making is an important part of daily and business life for both individuals and organizations. Although the multi-criteria decision-making methods provide decision makers the necessary tools, they have differences in terms of the assumptions and fundamental theory. Hence, selecting the right decision-making method is at least as important as making the decision.



FIVE BENEFITS OF AN IOT-ENHANCED SUPPLY CHAIN

As commerce gets more intelligent, logistics is increasingly relying on IoT devices to maintain the data-driven approach that today's businesses require.

Sean Galea-Pace

The Internet of Things (IoT) has the power to create a smarter and more connected world of commerce. As a result, the increased importance of supply chains and warehousing to eCommerce and global trade, there's never been a better time to consider adding IoT capabilities to logistics facilities.

Supply Chain Digital examines five benefits that supply chains can leverage by introducing targeted IoT solutions.

1. Real-time tracking

Transparency and accountability are key areas of a functional supply chain, and real-time tracking allows for both. IoT devices such as GPS monitors can now track everything from a shipment's location to its current temperature, providing up-to-the-minute facts that allow logistics professionals to fully understand how their supply chains operate.

Real-time tracking is useful for high-value items and temperature-sensitive goods. All stages of a shipment's chain of custody can be mapped and verified through the use of IoT data and device check-ins. As just one example, IoT devices can automatically flag shipments that have left a safe temperature zone and help protect customers from spoiled goods.

2. Automation

Supply chain automation will continue to grow in importance throughout the 2020s, particularly in the warehouse. As businesses automate increasing amounts of warehouse tasks, they will need

accurate and immediately available data to power their automated systems.

3. Paperwork Management

Paperwork management is essential for smooth supply chain operation, but is also a common employee pain point, particularly when the responsibility is on workers such as truckers. By leveraging smart logistics solutions, businesses can automate their most cumbersome paperwork tasks, such as verifying a trucker's freight broker bond or processing a bill of lading.

4. Forecasting Accuracy

A properly implemented IoT system can help improve a business's demand forecasting. By automatically collecting data, IoT systems help improve data accuracy and provide supply chain managers better materials to create demand forecasts.

IoT helps improve data collection practices in several different ways. First, it substantially reduces the influence of human error in data collection. It enables data to be collected at all times or at specified intervals and saves labour hours spent manually collecting data. Finally, it allows businesses to collect data that would be difficult or impossible to collect manually.

5. Inventory Control

Inventory control is an important part of warehouse and supply chain management, and IoT can provide benefits in this area as well. By leveraging advanced IoT sensors that automatically track and analyse inventory positions and stock levels, supply chain professionals can create an accurate and up-to-the-minute inventory tracking system.

Source : www.supplychaindigital.com



KISAN SABHA APP TO CONNECT FARMERS TO SUPPLY CHAIN AND FREIGHT TRANSPORTATION MANAGEMENT SYSTEM LAUNCHED BY CSIR

Kisan Sabha has 6 major modules taking care of Farmers, Mandi Dealers, Transporters, Mandi Board Members, Service Providers and Consumers

In present situation of COVID 19, farmers are looking for help in their harvest reaching the market, seed/ fertilizer procurement, etc. A robust supply chain management is urgently required to facilitate the timely delivery of the produce at the best possible prices.

Kisan Sabha App developed by CSIR-Central Road Research Institute (CSIR-CRRI), New Delhi to connect farmers to supply chain and freight transportation management system was remotely launched today, by DG, ICAR and Secretary DARE, Dr. Trilochan Mohapatra. Dr Mohapatra complimented CSIR on developing this portal as a one stop solution for farmers, transporters and other entities engaged in the agriculture industry and offered that ICAR can work together with CSIR and use the Krishi Vigyan Kendra's (KVK) networks for implementation.

DG CSIR and Secretary DSIR, Dr Shekar C Mande, present on the occasion, noted that "The development and launch of the App reiterates the commitment of CSIR in supporting the farmers in these critical times in the country. We look forward to partnering with ICAR, Industry, MSMEs, the trucker and farming community and all stakeholders to take this initiative forward", he said.

The launch of the app was witnessed remotely by representatives of industry, farmers, team of CSIR-CRRI and other senior scientists of CSIR. Dr Satish Chandra, Director of CSIR-CRRI highlighted that as the overall agriculture market is not well organized and lot of produce gets wasted or is being sold at a very low rates, a detailed primary study was undertaken wherein 500+ farmers, were interviewed and 6-day long survey with dealers, transporters and farmers was conducted in Asia's biggest Azadpur Mandi to understand the various issues and gaps in the current environment. Based on this study and the current prevailing situation, the Kisan Sabha App was developed.

- The portal connects the farmers, transporters, Service providers (like pesticides/ fertilizer/ dealers, cold store and warehouse owner), mandi dealers, customers (like big retail outlets, online stores, institutional buyers) and other related entities for timely and effective solution.
- The portal acts as a single stop for every entity related to agriculture, be they a farmer who needs better price for the crops or mandi dealer who wants to connect to more farmers or truckers who invariably go empty from the mandis.
- Kisan Sabha also works for people in agriculture services sector such as dealers of fertilizers/ pesticides, who can reach out to more farmers for their services.
- It would also prove to be useful for those associated with cold store(s) or godown(s). Kisan Sabha also provides a platform for people who want to buy directly from the farmers.
- Kisan Sabha has 6 major modules taking care of Farmers/Mandi Dealers/ Transporters/Mandi Board Members/ Service Providers/Consumers.

Kisan Sabha aims to provide the most economical and timely logistics support to the farmers and increase their profit margins by minimizing interference of middlemen and directly connecting with the institutional buyers. It will also help in providing best market rates of crops by comparing nearest mandis, booking of freight vehicle at cheapest cost thereby giving maximum benefit to the farmers.

**Director, CSIR- CENTRAL ROAD RESEARCH INSTITUTE,
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Source : PIB

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INVESTMENT IN LOGISTICS TO TOUCH USD 500 BILLION BY 2025

SURESH PRABHU

Expenditure on investment in logistics, including infrastructure, will touch USD 500 billion, annually, by 2025, said Union Minister of Commerce and Industry in New Delhi today. He further said that this will create millions of jobs and also do away with the hurdles hampering India's internal and global trade.

India is now being looked upon as one of the most appropriate destinations for manufacturing and service locations by many of the foreign companies. Further, initiatives like digital India, make in India, skill India have added a boost to the sub-continent's vast pool of resources, cost-efficient environment and skilled workforce.

During recent years, Indian government has taken many measures to improve the trade performance through efficient and effective logistics. The measures include smoothening of the border and cross border documentation and activities, dedicated freight corridors, investments in port and other infrastructures, alignment of all business processes thus attempting to improve logistics performance of the country. Recognizing that efficient and effective management of logistics will have a positive impact on overall trade in manufacturing and services.

The Minister said that Logistics Wing has been created in the Department of Commerce for the integrated development of this sector. Due to these efforts, infrastructure status has been granted to warehousing, cold chains and multimodal logistics parks. The Ministry is working on a National Logistics Policy and also bringing out a policy on the development of Multi-modal Logistics Parks to be announced soon. Further, the Minister said that the cost and speed of logistics at present is hindering the market share that Indian products deserve and in order to solve these issues in an integrated and holistic way the Centre for Trade Facilitation and

Logistics (CTFL) has been given a mandate by Department of Commerce (Logistics Division) to prepare a plan and act for following objectives:

- To bring together industry, academia, governments & organizations of national and international level, to work on the key supply chain and logistics, management challenges facing firms in the globalized environment.
- To train and build the required Human resource skills through appropriate training and academic programs and create a cadre of Trade Facilitation & Logistics management experts/professionals.
- To impart training to Government officials who are working in the Logistics & Trade facilitation sectors.

The Ministry has agreed to provide a block one-time funding support of 80.00 lakhs towards initial infrastructure and a phase wise support of 339.90 lakhs for four years. This centre will attempt to document and monitor the trade and logistics activities and suggest suitable measures for its improvement.

The Minister also released the logo of Logistics division. It is a graphic symbol representing a pair of swans who are known for their ability to travel long distances and are comfortable in the sky, water and on earth and represents team work, synergy and coordination between various partners involved in logistics.

Source : PIB

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WTO UPDATE

DG AZEVÊDO: “WE’VE ACHIEVED A LOT, BUT MUCH REMAINS TO BE DONE”

In his farewell remarks to the General Council on 23 July, Director-General Roberto Azevêdo reflected on the achievements secured during his seven years at the helm of the WTO and the challenges facing the organization ahead. DG Azevêdo leaves office on 31 August. This is what he said:

DG Azevêdo: “We’ve achieved a lot, but much remains to be done”

Thank you, Mr Chairman.

In preparing for today, I found myself looking back seven years to when I first addressed you as Director-General. And I can now tell you from experience, the last speech is much harder than the first.

The first is about goals, and a game plan to tackle the future.

The last one is about what has been achieved; how much is left to do; and saying farewell to people we really cherish. This final part is the toughest of all.

Back in September 2013, I said that the WTO was at a crossroads. It’s still at a crossroads — and will continue to be for some time yet. This is not surprising, because this Organization is too important to have it easy.

Each word, each comma that we negotiate here has a direct and measurable impact on public policies and business realities — and consequently, on people’s lives.

Our agreements are subject to dispute settlement procedures that are automatic and consequential — and I’ll come back to this point.

This means that negotiated outcomes here are always the product of truly complex, long and painful diplomacy.

It was clear then, when I made that first speech to you, that we needed to deliver agreements to bring this Organization closer to the changing realities of the 21st century.

And together, we did. The Trade Facilitation Agreement, in Bali, put the Organization back on the map as a venue for global trade rule-making. It gave us confidence that the multilateral track was viable, and that with enough political will and pragmatism, we could strike deals of great value for trade, growth and development.

After that, we tried to advance the remaining Doha Round issues. It was, quite frankly, a tall order. We confronted the gateway issues head-on, and tested a large number of potential approaches. But despite

intense efforts, including daily meetings and consultations with permanent representatives, it became apparent that positions in many areas were further apart than ever, with gaps widening instead of closing.

Still, in Nairobi in 2015 we managed to harvest some important multilateral outcomes. Eliminating agricultural export subsidies and the trade distortions they create had been a longstanding goal for many members. We expanded the Information Technology Agreement, reducing and eliminating tariffs on \$1.3 trillion of new-generation tech products.

Not long after Nairobi, and like all multilateral institutions, the WTO was engulfed by strong political headwinds. These headwinds, and the associated tensions around trade, owe much to dramatic advances in technology, and the changes they have provoked in labour markets and in societies as a whole. It is also true, I have to say, that domestic social and economic policies have not done all they could have to contain inequalities of income and opportunity, and to ensure that the benefits from trade are more widespread.

Despite these very challenging circumstances, standing still, for this organization, was not an option. We needed to find ways to move forward.

It was clear that Doha issues could not simply be abandoned. We needed to find new, creative ways of pressing on in areas of fundamental importance to a sizeable portion of the membership. And indeed, we have been able to make progress in the ongoing negotiations on fisheries subsidies as well as in discussions on agriculture and other important issues.

At the same time, it was an inescapable reality that there were other, very real issues that needed to be addressed within the WTO. To take one example, it was simply not acceptable for the WTO to be in the 21st century, decades into a profound digital revolution, with no truly consequential discussions on digital trade.

We therefore began to test other approaches available in the WTO toolbox. Groups of members started to explore innovative ways of advancing issues of interest. You know them all: e-commerce; the facilitation of investments for development; micro, small and medium sized enterprises; the domestic regulation of services; and trade and the economic empowerment of women.

This second track of work received an important boost at MC11 in Buenos Aires in 2017. Those initiatives have

since become an important part of work here in Geneva, with a growing number of participants from both the developed and developing worlds, and a welcome spirit of transparency and inclusivity from the proponents.

Delivering on both the multilateral front and the joint initiatives will be vital for the future of the system. For the road ahead, MC12 will be a key landmark. It must deliver credible agreements and map the way for further reforms.

I had hoped to work with you to deliver precisely such outcomes this past June. But the postponement of the ministerial to next year, because of the pandemic, brought me to the conclusion that I needed to step down this summer.

Had I stayed on for the remaining year in my term, the DG succession process and the MC12 preparatory process would have overlapped. My decades of experience working with this Organization left me firmly convinced that this would have irretrievably compromised prospects for success at the ministerial.

In light of the COVID-19 crisis, MC12 has become even more important: it will be a key decision point for you to shape the direction of the post-COVID global economy.

The date of the ministerial, which now seems likely to be held next June, was beyond my control. The timing of my succession, however, was within my power to change. My early departure allows you to decouple the two processes. This was best for the system, making my choice a no-brainer.

It's a no-brainer because the WTO is much more than just a job to me. My first posting in Geneva was in 1997. We lived almost five years in this building. Even after going back to Brasília in 2001, my kids used to tease me that I hadn't actually left Geneva. I was still spending a big portion of my time here, first as a litigator, then as a negotiator.

In 2008, I came back as Brazil's Ambassador to the WTO. Five years later you appointed me Director General.

Twenty-three years of my professional life have been intrinsically linked to this Organization. I have had many happy moments, but also — like most of us — my share of disappointments.

But even at the lowest points, not once in these 23 years did I ever doubt the role that this system plays in improving people's lives around the world. We will be worse off if the system's relevance and effectiveness are allowed to erode.

When I announced my decision to step down back in May, I said that MC12 would be a stepping-stone to the future of the WTO.

But what should the future of the WTO look like? That's the question. Of course, it will be shaped by you, the members. But I want to take this moment to share with you my own views on the subject.

And let me start with a warning: don't assume that the

WTO has a future irrespective of what you do here.

To assure the future of the WTO, it is fundamental that members truly believe in the need to update the system. Some may still believe that the pressures afflicting the WTO are localised, and therefore temporary. I want to assure you that they are not.

The pressures on trade, and on the WTO, derive from fundamental structural changes in the global economy. Changes in technology, groundbreaking business models, and shifts in the balance of economic power — they all have fundamentally altered the way countries and companies interact, not to mention the ways we go about our daily lives.

The rules we negotiated back in the 1980s and signed into force in 1994 are still very relevant and much-needed. They are, in fact, the last bastion preserving some degree of order and predictability in global trade and economic relations. Lose this, and we lose fundamental pillars of peace and prosperity.

Yet lose them we may — if the WTO does not evolve.

In substantive terms, there is a wide range of issues that are before you right now. Each of them would offer a meaningful contribution to WTO reform.

But at least as important as the 'what' of reform is the 'how'.

The WTO is now driven by 164 members. I don't have to tell you how different they are, and how differently they think. A one-size-fits-all recipe will not work.

We should remember that agreements at the WTO have always sought to accommodate the diversity of our members with flexibilities of different kinds.

- Special and differential treatment (S&D) was one way.
- Member-specific flexibilities was another: subsidy caps, quotas, higher tariffs on certain products, and individual services commitments that open some areas — but not others.

In short, our agreements always had a way of accepting different contributions from members.

Our Trade Facilitation Agreement offers a new framework altogether for accommodating diversity among members. It allowed each country to specify the flexibilities and the time they needed to implement the Agreement. And it did so without compromising the high level of ambition that was the final destination.

An open-minded approach to flexibilities would open up a new era of fruitful work for the organization. And when exploring potential areas for such work, unanimous agreement cannot be a prerequisite for starting conversations at the WTO. It's as simple as that.

Not all members will necessarily be ready for a particular conversation or a particular step. That is okay, and absolutely natural. But if full consensus is required to even begin to discuss any issue, this Organization will not survive. I'm glad that this is not where we are

today.

The joint statement initiatives potentially represent one path to a more nimble, flexible WTO. No member is compelled to participate, yet the doors are open to any member willing to join — or willing to leave. Plurilateral agreements have been with us since day one. But the fact is that any new flexible non-multilateral arrangement — whether it is the JSIs or something similar — will inevitably raise important practical and systemic questions.

Multilateralising their results may not always be possible. But limiting their application to signatories leads us to many grey areas. There will be many systemic questions, and the answers will differ, I suppose, from case to case. I'm sure you will be able to find them. But even before you get to that point, you will need to get past the most common question I hear in discussions about such arrangements. And that question is: "Won't this approach compromise multilateralism?"

That's a big question. But my answer would be: "This approach is the only way we can save trade multilateralism."

And in this Brave New World of ours, predictable and updated rules are of enormous value. They will be pursued, believe me. If not in the WTO, then in other less representative forums. And if governments are unwilling or unable to define the rules of the game, then these rules will be set by private parties — even less representative, and even less likely to deliver gains for everyone. We would all be better served if these rules, if these parameters, are negotiated at the WTO's large table.

Then again, we know that agreements reached at the WTO have historically been valued for their enforceability through the dispute settlement mechanism. And here, too, we have a problem. We all know where we are with the appeals stage of that mechanism. Finding a solution is not particularly hard, if you all truly want a solution. And in this regard, I'm not sure this is where things stand.

There are stop-gap solutions out there. Some of you are moving in that direction already. Nevertheless, the fact that we are not in a position to agree on the means of enforcing our agreements speaks volumes.

Whatever decision you take on this, I would argue that a dysfunctional dispute settlement mechanism introduces an unacceptable asymmetry in the system. This asymmetry is to the particular detriment of the smaller and more vulnerable parties to any dispute. I don't think we can simply sweep this under the rug, and it must remain a priority for WTO members to address. I'm sure that much of what I've said today is not news to you. I have made many of these points on previous occasions. Nonetheless, I thought I should clearly spell out what I think the most critical challenges and the more promising avenues are. And to the extent I have been able to facilitate and encourage some of this new thinking during my tenure as Director-General,

I have been happy to do so. All these innovative approaches are just a start, I would say, but a very promising start. Members now have a foundation on which to build new rules and standards, without ever forgetting the multilateral track and the fundamental issues that must still be addressed more fully.

We've achieved a lot and we must be proud of that. But much remains to be done. I wish the next Director-General every success in addressing these and other challenges. I will certainly be supportive of your efforts and will be a passionate advocate for the system wherever the future takes me. As I said earlier, the WTO has been an integral part of my life. Over the past 23 years, I have made life-long friends among delegates, peers — including you yourself, Mr Chairman — and the Secretariat.

Speaking of the Secretariat, I want you to know that we have within these premises nearly 700 souls who dedicate their careers to serving you, members, with commitment, professionalism, and a degree of excellence that you will not find anywhere else. I knew that before, and my time as DG confirmed everything I said. I am privileged to have worked with them and you are fortunate to be supported by people of such calibre.

I would like to extend special thanks to my deputies — Alan, Fred, Karl and Xiaozhun — for their wise counsel and active engagement with members and the wider trade community. And I want to thank each and every member of the Secretariat, both those who worked closely with me, including past and present members of my office, and those that I unfortunately didn't get to see as much. Without you, we would not be the organization we are.

On the subject of support, I must find a very special place for my family — which is growing by the minute. In both the good moments and the difficult ones, they have all been great enthusiasts for the WTO project. Our fantastic daughters, Paula and Luisa, who with their dear husbands, Andre and Thiago, have given us five beautiful granddaughters: Alice, Olivia, Eva, and the twins Catarina and Isabela. My mom, Normisa, with her unconditional love and advocacy. My equally loving "other" mom, Maria, who raised me as surely as my blood relatives. My father and brother, Renato and Claudio, who are no longer here, but who are always here. And my wife, Lelé, without whom none of this would have happened, who has always been there to help me reach higher and catch me when I fall.

Regardless of what has or has not been achieved over the years, this human connection with all of you is what I prize the most. These deep and fundamental connections never disappear. So I'm sure that this is not a farewell. This is, as we say in Brazil, just a "tchau".

Thank you all for your strength, your companionship, your solidarity, your support and your friendship. Come visit! Thank you all once again, and like I said before: Tchau!

Source : WTO Website.

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INDIA PLANS NEW SUPPLY CHAIN INITIATIVE ALONG WITH AUSTRALIA, JAPAN TO COUNTER CHINA

ASIT RANJAN MISHRA

Trade ministers of India, Australia, and Japan in a meeting on Tuesday decided to soon launch an initiative on supply chain resilience and invited like-minded countries in the Indo-Pacific region to join the initiative

Trade ministers of India, Australia, and Japan in a meeting on Tuesday decided to soon launch an initiative on supply chain resilience and invited like-minded countries in the Indo-Pacific region to join the initiative. The move aims to counter China's dominance of global trade and supply chains.



“Australia-India-Japan Ministers met for a new initiative on Supply Chain Resilience. Like minded nations are now working closely towards trustworthy, dependable and reliable supply chains in the Indo-Pacific region,” trade minister Piyush Goyal tweeted on Tuesday.

The meeting held by videoconference was attended by Goyal, Australia's minister for trade, tourism, and investment Simon Birmingham, and Japan's minister of economy, trade and industry Kajiyama Hiroshi.

In light of the covid-19 crisis and the recent global-scale changes in the economic and technological landscape, the ministers underscored the necessity and potential to enhance the resilience of supply chains in the Indo-Pacific region, according to a joint statement by the three countries. “Recognizing the pressing need for regional cooperation on supply chain resilience in the Indo-Pacific, the ministers

shared their intention to work toward the launch of a new initiative to achieve the objective through cooperation. They instructed their officials to promptly work out the details of the new initiative for its launch later this year. They noted the important role of business and academia in realizing the objective,” the statement added.

The initiative could not have come at a more opportune time in the post-covid scenario when there is a likelihood of “rechurning of supply chains” in the Indo-Pacific region, Goyal said at the trilateral meeting.

“India endorses the broad concept of working towards ensuring a trustworthy, dependable and reliable supply chain in the Indo-Pacific region. The diversification of supply chain is critical for managing the risks associated with supply of inputs, including disciplining price volatility. We could provide the core pathway for linking value chains in the region by creating a network of reliable long-term supplies and appropriate capacities,” he said.

Goyal described Australia, India and Japan as crucial players in the region and said that during 2019 the cumulative GDP of the three countries was \$9.3 trillion while cumulative merchandise goods and services trade were \$2.7 trillion and \$0.9 trillion, respectively. “With such a strong baseline, it is important that we use this opportunity to work towards enhancing the share of our trade and investment in the region,” he said. He stressed on the need to expand trade between the three countries, but pointed out that with Japan, despite India's global exports and Japanese global imports being high with zero preferential tariffs, the procurement from India was limited.

Goyal said that the digitization of trade procedures is a very important step for facilitating trade and maintaining resilience in supply chains.

Source : Live Mint

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CIRCULAR ECONOMY AND BUSINESS SCENARIO

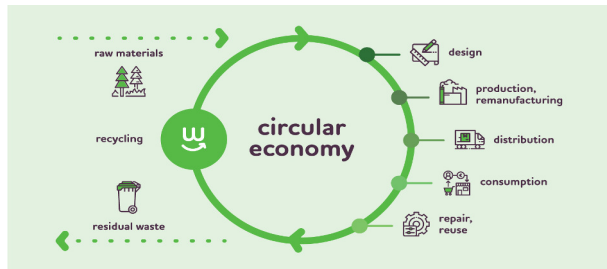
HENAL SHAH

INSTRUMENTATION ENGINEER | SUPPLY CHAIN ENTHUSIAST
IIMM-AHMEDABAD BRANCH, henalshah31@gmail.com

The future of business is circular, and there's no room for waste in it. The new circular economy aims to bring circularity into heart of business leadership and practice.

But what is Circular Economy?

The circular economy is a model of production and consumption, which involves sharing, leasing, reusing, repairing, refurbishing and recycling existing materials and products as long as possible. In this way, the life cycle of products is extended.



In practice, it implies reducing waste to a minimum. When a product reaches the end of its life, its materials are kept within the economy wherever possible. These can be productively used again and again, thereby creating further value.

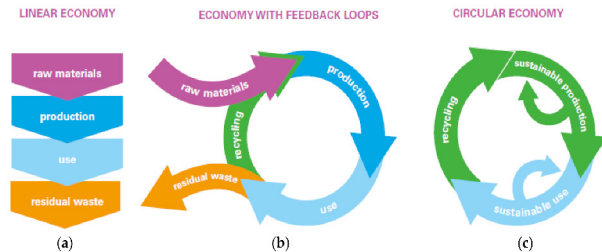
Looking beyond the current take-make-waste extractive industrial model, a circular economy aims to redefine growth, focusing on positive society-wide benefits. It entails gradually decoupling economic activity from the consumption of finite resources, and designing waste out of the system. Underpinned by a transition to renewable energy sources, the circular model builds economic, natural, and social capital. It is based on three principles:

- Design out waste and pollution
- Keep products and materials in use
- Regenerate natural systems

Let's see the concept of a circular economy.

- In a circular economy, economic activity builds and rebuilds overall system health. The concept recognises the importance of the economy needing to work effectively at all scales – for large and small businesses, for organisations and individuals, globally and locally.
- Transitioning to a circular economy does not only amount to adjustments aimed at reducing the negative impacts of the linear economy. Rather, it represents a systemic shift that builds long-term resilience, generates business and economic

opportunities, and provides environmental and societal benefits.



Technical and biological cycles

- The model distinguishes between technical and biological cycles.
- Consumption happens only in biological cycles, where food and biologically-based materials (such as cotton or wood) are designed to feed back into the system through processes like composting and anaerobic digestion. These cycles regenerate living systems, such as soil, which provide renewable resources for the economy.
- Technical cycles recover and restore products, components, and materials through strategies like reuse, repair, remanufacture or (in the last resort) recycling.

Origins of the circular economy concept : The notion of circularity has deep historical and philosophical origins. The idea of feedback, of cycles in real-world systems, is ancient and has echoes in various schools of philosophy. It enjoyed a revival in industrialised countries after World War II when the advent of computer-based studies of non-linear systems unambiguously revealed the complex, interrelated, and therefore unpredictable nature of the world we live in – more akin to a metabolism than a machine.

Such an economy is based on a few simple principles.

1. At its core, a circular economy aims to design out waste. Waste does not exist: products are designed and optimized for a cycle of disassembly and reuse. These tight component and product cycles define the circular economy and set it apart from disposal and even recycling, where large amounts of embedded energy and labour are lost.
2. Circularity introduces a strict differentiation between consumable and durable components of a product.
 - i. Unlike today, consumables in the circular economy are largely made of biological ingredients or

‘nutrients’ that are at least non-toxic and possibly even beneficial, and can safely be returned to the biosphere, either directly or in a cascade of consecutive uses.

- ii. Durables such as engines or computers, on the other hand, are made of technical nutrients unsuitable for the biosphere, such as metals and most plastics. These are designed from the start for reuse, and products subject to rapid technological advance are designed for upgrade.
3. The energy required to fuel this cycle should be renewable by nature, again to decrease resource dependence and increase systems resilience (to oil shocks, for example).

Let's see, why do we need to switch to a circular economy?

The world's population is growing and with it the demand for raw materials. However, the supply of crucial raw materials is limited. We need to transform systems across the global economy to ensure that in 2050 more than nine billion people can live well within the limits of our planet. We must see raised ambition across businesses and governments to scale up climate action towards a carbon neutral economy. The urgency is clear: business, government and civil society must go further, faster to avoid detrimental impacts to people and planet.

How to switch?

What was previously viewed as waste now has value. However, those ecosystems are complex and include many interdependencies and feedback loops. Digital technology has the potential to provide visibility and enable improved decision making when it comes to raw materials and services. Already, 35% of companies believe that digital technology will be a key enabler for their circular economy strategies, but very few are leveraging the technology for this purpose yet."

2020 is the "super year" for climate and many more sustainability-related ambitions including food, nature and the SDGs in general. It will be a defining year if we want to save our planet.

Let's see the benefits out of Circular Economy.

Moving towards a more circular economy could deliver benefits such as reducing pressure on the environment, improving the security of the supply of raw materials, increasing competitiveness, stimulating innovation, boosting economic growth, creating jobs. Businesses will be capable to capture more value from their materials and resources and also build loyalty with their customer base.

Consumers will also be provided with more durable and innovative products that will increase the quality of life and save them money in the long term. Circular business advantage offers a pathway for both large and small organisations to identify, capture and retain additional revenues or reduce costs while meeting customer demands in new ways. This can lead to relative decoupling of resource use and through lowered costs of access and ownership which benefits economic growth.

Using the tools of a circular economy offers all organisations a lasting advantage by combining more productive ways of doing things, while engaging in more system wide activity: 'feeding the forest' and not just 'doing less harm'.

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Indian Institute of Materials Management

MISSION

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

OBJECTIVE

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

CODE OF ETHICS

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

ITC ACCELERATES DIGITISATION TO ENHANCE OPERATIONAL EFFECTIVENESS:

SANJIV PURI

The current pandemic has accelerated manifold the transition to digitalisation that was already moving at high velocity and the company is adopting new-age technologies to stay ahead of the curve, Puri said.

Diversified business entity ITC has accelerated digital transformation under the company's future-ready strategy to enhance competitive advantage and operational effectiveness, its Chairman Sanjiv Puri has said.

The current pandemic has accelerated manifold the transition to digitalisation that was already moving at high velocity and the company is adopting new-age technologies to stay ahead of the curve, Puri said.

New technologies such as Industry 4.0, Artificial Intelligence, Big Data, Industrial Internet of Things (IoT) and Machine Learning are being deployed by all Businesses, including supply chain and logistics to enhance operational effectiveness, Puri said while addressing shareholders in his AGM speech.

ITC had made substantial investments for a digital ecosystem to drive "smart manufacturing, product quality, traceability and supply chain agility, amongst others. This accelerated digital journey has begun to demonstrate appreciable outcomes," he added.

According to Puri, the pandemic has accelerated the transition to digitalisation and apart from e-commerce, digital entertainment, work-from-home conferencing, telemedicine, education, learning and skill development, e-services, social media communications have all experienced an exponential surge.

ITC's Marketing Command Centre now leverages

"cloud-technology, cutting-edge social-media engagement tools and a digital marketing & analytics platform" to drive contextual communication and product development rapidly.

"The Centre has today developed into a real-time repository on market trends. Based on the insights gained, several digital campaigns have been rolled out and product variants developed," he added.

Social media trends like 'Dalgona coffee' were leveraged to deepen consumer engagement for ITC's Sunbean Beaten Caffe and introduce a new variant in a long shelf life ambient format.

ITC has also launched an online ordering system for retailers to address the surge in demand during the pandemic. "Enhanced presence across e-commerce platforms led to accelerated growth in sales and marketing of ITC's FMCG products," he said.

"Enhanced presence across e-commerce platforms led to accelerated growth in sales and marketing of ITC's FMCG products," he said. Its wholly-owned subsidiary, ITC Infotech has developed domain-led expertise in emerging areas of digital and automation solutions and is now the company's strategic partner in its journey of digital transformation.

"The pandemic saw an explosive adoption of digital tools and platforms, which is poised to redefine business operations and consumer engagement significantly," said Puri adding ITC would continue to invest in "building its digital enterprise capacity and capabilities to stay ahead of the curve" and shape formidable strengths for the future.

Source : *Moneycontrol.com*



DIGITISATION IS THE ONLY CHOICE FOR SMALL BUSINESSES IN INDIA — AND IT MAY ADD UP TO \$200 BILLION TO THE GDP

SANCHITA DASHJUL

According to the Cisco India SMB Digital Maturity Study 2020, digitalisation of small and medium businesses (SMBs) could add anywhere between \$158-216 billion to India's GDP by 2024.

MSMEs currently contribute around 6.11% of India's manufacturing GDP, and 24.63% of the GDP from service activities as well as 33.4% of manufacturing output.

Everyone from the government, to corporates and even startups are focussing on the micro, small and medium enterprises of India.

India's small and medium businesses are in the spotlight now as the Modi government has pushed out several initiatives to boost the sector, cue Atmanirbhar Bharat. Given the current scenario due to COVID-19, more and more consumers are looking online, e-commerce is booming and it provides the potential for SMBs to transform and build on digitisation of their businesses. A shift that has been underway and began post demonetisation in 2016.

According to the Cisco India SMB Digital Maturity Study 2020, digitalisation of small and medium businesses (SMBs) could add anywhere between \$158-216 billion to India's GDP by 2024 and contribute to the country's economic recovery post COVID-19.

According to the Confederation of Indian

Industries, MSMEs currently contribute around 6.11% of India's manufacturing GDP and 24.63% of the GDP from service activities as well as 33.4% of manufacturing output.

From government, to corporates and startups – everyone wants to work for MSMEs

This goes on to prove why everyone from government, to corporates and even startups are focussing on the micro, small and medium enterprises of India. The Indian government on May 13 had said that the definition of micro, small and medium enterprises (MSME) will be changed to allow for relatively bigger companies to avail the benefits of cheaper and priority loans.

Earlier in April, Nitin Gadkari, India's minister of micro, small and medium enterprises had launched an idea and innovations portal for SMBs – MSME Bank of Ideas, Innovation and Research.

But it's not just that, from e-commerce companies like Amazon and Flipkart to corporates like Mastercard have been doling out initiatives to help the MSME sector. Several startups like Khatabook, FarEye, Udaan, Shiprocket and Reliance-backed Nowfloats among several others are helping MSMEs in the digitization journey.

Source : www.businessinsider.in

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GREEN SUPPLY CHAIN MANAGEMENT – GSCM

CHIRAG KALARIA, PROCUREMENT PROFESSIONAL - AMUL INDIA

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As the year 2020, started we knew nothing or expected anything like what we have seen in the past several decades. COVID 19, which has created a huge storm in everyone's life and in every sphere of business, where people lost their lives, medical facilities were and are still being tested (while I write this) financial markets, consumerism & mental health are all being put under severe pressure by internal & external acts.

Isn't it time for the organizations to have to realize that to most effectively manage the environmental burdens caused by industry and commerce, they need to look beyond just their most immediate operations and processes. Organizations need to consider their supply chain both upstream and downstream.

What are the external forces evolving for a greener environment?

Commerce and industry have gone through substantial changes over the past few decades. In the hearts of these evolutionary and revolutionary changes are political, social, technological, market, and economic forces that have caused organizations to seriously consider their impact on the natural environment.

Several forces have culminated in a much larger audience and stronger interest in greening and, broadly, sustainability.

If I need to rank the drivers then, here is the below –

1. Science on environmental damages caused by industry has improved. In this situation, ignoring factual findings and consensus within science is hard to ignore. Climate change science, pesticides and endocrine disruptors, ozone-depleting gases, and a number of other environmental problems can be traced to practices, processes, and products from the industry.
2. Communication is far swift & widespread than ever before. Companies can communicate with their shareholders, employees, and competitors. Consumers and communities and other stakeholders who are influenced by industrial and corporate activities can get their information faster. The advent of the Internet and minute-to-minute news and reporting have all contributed to this pervasive and incessant communication. Sharing this information has become easier than ever. Organizations seeking to limit their image and reputation risks pay close attention to this ubiquitous communication related to environmental concerns.
3. Change which is a constant has become faster. New technologies and cultural changes have always

occurred. But now, concerns that were once viewed, from an environmental perspective, as due to occur decades from now are starting to appear.

Record volatility in weather conditions, warming at historically increased and higher than ever levels, and the melting of the polar cap are all concerns that were expected to occur in the long-term future.

Industrially, globalization has become very common in commerce and industry; thus changes in one area can easily permeate the world. This includes environmental regulatory practices.

4. Costs are higher and the impact is greater than in times past. As world population and affluence increase, further, development means the additional anthropocentric value is at stake. Environmentally related crises and catastrophes can mean a heightened impact due to the greater number of people affected and the greater developed property values lost.

The sea- coast regions of the world have the most valuable properties. These regions are very susceptible to weather changes, sea-level change, and contamination due to vulnerable watersheds. If environmental damage is caused by an industrial environmental accident, the integrated and concentrated populations of a region can be greatly affected. Sources of livelihood could be disrupted.

In developing countries, where the growth has been at historic levels—never before has this type of economic growth occurred globally— and where regulations and industrial hygienic and environmental practices have been lax, polluted lands and rivers can cause large parts of cities to shut down.

Finally, stakeholders have a louder voice. Communities, non-governmental organizations (NGOs), and other non-ûdiciary stakeholders can instantaneously broadcast their messages to the world. Given that communication and knowledge transfer has become easier and more accessible than ever before in the history of man, the same systems can prove valuable for those previously with limited voice. The major conduit of this information and messaging consists of various social media outlets. In many places in the world, news of corporate and supply chain environmental issues, accidents, disasters, and various incidents can be broadcast broadly through YouTube, Twitter, Facebook, and even LinkedIn. Blogs have also become part of the social media landscape where various stories can be written and delivered by individuals. Stakeholder websites have also become avenues for sharing reports and stories broadly.

These and a number of other forces are causing organizations to pay greater attention to greening and environmental issues, more so now than in the past when regulatory issues were the major drivers.

Environmental Concerns

The major reason for the greening of corporate supply chains is to address environmental burdens caused by industry and its operations. The environmental burdens can occur in different media such as air, water, or land and at various levels, such as global, regional, and local levels.

Global issues affect regions throughout the world. The most pervasive environmental concern centers around global warming and climate change. Increasing global temperatures have been tied to anthropogenic activities. Likewise, species decimation is considered a global problem since various species can affect local or global ecosystems. Also, the global impact on plant biodiversity can also affect the potential to find medicines and cures.

Regional problems impact regional areas. For example, acid rain is a major issue in many developing countries due to increased manufacturing. Regional issues relate to the acidification of lakes and waterways, which may impact many water species and communities that depend on those water supplies.

Local problems are those that may impact municipal areas instead of whole regions. For example, pesticides and herbicides may affect local waterways and agricultural regions. Herbicides may cause less diversity and more sensitivity among the plants in a region due to a decrease in biodiversity. Pesticides with endocrine disruptors can impact human health and fertility in local areas.

Industry and its supply chains have been major contributors to these sources of anthropogenic environmental burdens. But industry and supply chains are needed to supply the demands of our increasing populations. The balance of economics with the environmental and social influences of organizations and their supply chains is a challenge for both organizations and governments.

Green Supply Chain Management from linear Supply Chains to Closing the Loop via Circular Economies.

The traditional supply chain management description by several academics and professors implies a linear relationship with flows up and down the supply chain.

As environmental issues and sustainability become more integrated, the supply chain will need to become more circular and nonlinear, where loops may not necessarily return to the beginning of a supply chain but can occur anywhere within the supply chain.

The return aspect has been recognized as an important dimension within the SCOR model, although extending the life of the product and greening aspects were not the major goals in the introduction of the return activities. These major activities were initially concerned with warranty and service returns.

To “close the loop” of the supply chain, major elements of reverse supply chains and reverse logistics need to be integrated into the standard linear definition of the supply chain. The activities may also relate to various greening concepts, such as recycling, remanufacturing, reclamation, reuse, and reduction, which are listed in the figure in the order of least to greatest environmental burden.

The forward supply chain begins with product and process design. Procurement focuses on the upstream supply chain.

Both raw material (non-recycled material) and virgin material (material that appears in its most fundamental form) are acquired for production purposes.

Production may contain fabrication and/or assembly operations and activities. Finally, come distribution activities to the customers for consumption. These are the traditional linear activities of the supply chain.

The return activities, managed by reverse logistics functions, then flow back into various stages of the forward supply chain. Reuse, remanufacture, and recycle activities may occur at different stages.

Typically, the later the stage at which the flow of returned products and materials occurs back to the forward supply chain, the less energy that is expended, the fewer operations that occur, and the less environmental burden that results.

Other elements of this model include energy usage, waste generation, and reduction of materials and waste throughout the supply chain activities. This flow may be for one or multiple organizations.

Corporate Environmental Management

Understanding some of the major greening activities of green supply chains requires understanding some of the major internal corporate environmental practices that have evolved over the past couple of decades.

Traditional corporate environmental management activities would include filing environmental reports, acquiring environmental information that is required by law, and complying with environmental regulations. These activities are typically reactive activities inasmuch as they are required by law.

But, in order to not only meet regulatory policy but possibly to gain competitive advantage, a number of practices, tools, and technologies have been utilized by organizations. Four major corporate environmental elements include environmental management systems (such as ISO 14000 systems), life cycle analysis (LCA), and eco-design (also known as design for the environment).

1. Environmental Management Systems (ISO 14001)

Environmental management systems (EMS) can be defined in many ways. EMSs can range from relatively informal systems managed operationally by a standalone single computer to more involved programs, such as the best known EMS standards, the ISO 14001 certified EMS. The ISO 14000 series of standards

includes elements of organization evaluation and product/process evaluation. These standards include descriptions of EMS, environmental performance evaluation, and environmental auditing. Product and process standards help to define LCA, environmental labeling, and environmental factors in product standards. The only standard that may be registered or certified is the ISO 14001 (environmental management system) standard. The remaining elements are only guidelines available to organizations.

The substantive requirements of ISO 14001 document and include Environmental Policy, Planning, Implementation and Operation, Checking and Corrective Action, and Management Review. The ISO 14001 EMS requirements embody the PDCA (plan-do-check-act) cycle of continuous improvement. In the PDCA cycle, an organization plans a change aimed at improvement (plan), implements the change (do), evaluates the results (check), and finally institutionalizes the change (act). The comprehensiveness of these systems incorporates many traditional corporate environmental activities and more proactive, competitively oriented activities, including LCA and eco-design, which we briefly introduce.

2. Life Cycle Analysis

Life cycle analysis (LCA) is a systemic process used to evaluate the environmental burdens associated with a product or process. It identifies energy and materials used and the wastes or emissions released to the environment. LCA is also meant to evaluate and implement opportunities to effect environmental improvements. A life cycle of a product, service, or utility may include evaluation and analysis from the inception or the design of a product until its end-of-life disposal or disassembly and beyond, such as its reassembly. LCA involves calculating and analyzing the burdens associated with the production, use, and reuse of utilities, goods, and services over their life cycle. This includes processes such as cultivation, extraction, manufacture, delivery, use, recycling, and maintenance. The closed-loop nature of materials and products has made such an analysis more complex and may incorporate product stewardship activities.

An LCA could include three separate but interrelated components: an inventory analysis, and impact analysis, and improvement analysis. Life cycle inventory analysis quantifies energy and raw materials requirements, air emissions, waterborne effluents, solid waste, and other environmental releases incurred throughout the life cycle of a product, process, or activity. The goal is to examine all the inputs and outputs in a product's life cycle, beginning with a product's composition, where those materials came from, where they go, and the inputs and outputs related to those component materials during their lifetime. It is also necessary to include the inputs and outputs during the product's use. In practice, much of LCA focuses on this level of analysis.

Life cycle impact assessment is an evaluative process of assessing the effects of the environmental findings identified in the inventory component for all inputs and outputs throughout the activities of an organization

or supply chain. The impact assessment normally addresses ecological and human health impacts but has expanded to include social, cultural, and economic impacts. The impacts from a process from the production and use of a product in order to benchmark impacts from competing products or processes could be compared to help manufacturers or consumers choose among options.

Life cycle improvement analysis (LCIA) is a continuous improvement process. LCIA conducts an improvement analysis to determine how the product, service, or utility influences the environment. For example, the conservation of energy or water in the manufacturing process will reduce the environmental impacts of that process. Substituting a less hazardous chemical for a more toxic one would also reduce the impact. The change is then made in the inventory analysis to recalculate its total environmental impact.

3. Design for the Environment and Eco-Design

The term 'design for the environment (DFE)' or 'eco-design' refers to the environmental design of a product and/or a process. It focuses on reducing (preventing) the environmental effects of a product before it is produced, distributed, and used. Eco-design examines the disassembly of products at the end of life and reveals the associated cost benefits and environmental impact of revision, reuse, and recycling. Eco-design and LCA typically go together with the required appropriate information and database systems. Along with the usual design factors, DFE recognizes that environmental impacts must be considered during the new product and process design and redesign. It is defined as the systemic consideration of design performance with respect to environmental, health, and other objectives over the full product life cycle. DFE is a design process in which a product's environmentally preferable attributes—recyclability, disassembly,

Maintainability, refurbish ability, and reusability—are treated as design objectives rather than design constraints.

DFE is the ultimate pollution prevention tool. It is at the design phase of any product where a majority of the product's characteristics are fixed, and 80 percent of the environmental impacts may be determined at this stage. The DFE process usually entails five major steps: assess environmental impacts; research the market; run an ideas workshop (brainstorm), or ideas generation; select design strategies; design the product. The tools for DFE are quite varied and range from simple scoring approaches to techniques that include detailed databases and a broader continuous evaluation of the product and process as data is generated and gathered.

Other corporate environmental management activities that may influence organizational and inter-organizational planning include product stewardship, ecological and carbon footprinting, eco-labels, total quality environmental management, lean principles, and the so-called RE's—Recycling, Remanufacturing, Reuse, Reclamation & Reduction.

To be continued....

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SEVEN WAYS TO COPE WITH SUPPLY CHAIN DISRUPTIONS DURING A GLOBAL CRISIS

KUSHAL NAHATA
CEO & CO-FOUNDER, FAREYE

Restrictions during the pandemic have triggered disruptions in supply chains.

Enterprises right now are channelling all of their energies into analysing their business continuity plans. But companies that are delivering essential supplies, such as food and medicines to customers have one more critical thing to worry about – crisis management.

Nationwide lockdowns in many countries around the world during the Coronavirus pandemic have triggered challenging disruptions in supply chains. More than ever retailers, suppliers, transport operators and online delivery companies have a crucial role to play when it comes to serving society, especially those badly affected by the ongoing crisis and by ongoing lockdowns. It is a herculean task and demands that businesses introduce major changes in their existing supply chain operations.

- Limiting eCommerce disruptions in times of crisis

How to cope with a spike in demand for online deliveries

With consumers in many countries advised to stay in their homes or limit their movements, online deliveries have become the safest and most convenient way to buy essentials. This has led to an unprecedented surge in demand for online deliveries with panic buying in the first few weeks helping to fuel this demand.

Figures from Quartz show that since 9 March there has been a big increase in the demand for drivers and resources to support this growing demand, including a 78 per cent increase in food delivery and 15 per cent increase in package delivery. Some supermarkets in the UK, for example, have announced hiring sprees, including Tesco, which has added 200 vans to its fleet and hired thousands of new drivers to help grow its home delivery business, as well as ramp up click & collect services.

Some have turned to partnering with other organisations, such as Marks & Spencer, which recently partnered with Deliveroo to deliver around 60 M&S essentials like milk and bread. While others are still struggling with demand. Amazon recently highlighted that it has been experiencing Prime Delivery delays and running out of stock of popular household items, while online retailer Ocado suspended its online food delivery service for a period of time saying it simply cannot meet demand. In Australia, Coles' delivery windows were closed for a week in many areas of Melbourne and Sydney, with the website automatically prompting consumers to select the 'click & collect' option if they

wanted their groceries sooner.

As countrywide restrictions intensify, incidents of poor scalability, delivery cancellations and delays will keep happening unless businesses introduce measures to get their supply chain up and running. Now, more than ever, efficiency of supply chains will determine how well businesses are coping up with the ongoing challenges.

Seven ways to bring supply chain and delivery operations up to speed:

- Leverage crowdsourcing capabilities

To meet such unprecedented demand for home deliveries, businesses must focus on optimising their key assets, including staff and vehicle capacity. They can leverage advanced crowdsourcing technologies to optimise staff capacity by onboarding temporary or part-time delivery executives from across disparate delivery provider ecosystems.

- Ensure contactless payment and deliveries

As 'social distancing' becomes the norm for now and some time in the future, retailers should provide customers with contactless or "tap-and-go" payment options, eliminating cash transactions. OTP based transactions or even payment by touching cards are recommended now. Businesses also need to strictly follow 'leave at door' deliveries guidelines. Deliveries should be made flexible by allowing customers to choose where a particular order should be placed and when.

- Why 2019 is the year of the supply chain

- Encourage employees to drive decision-making

To quickly respond to immediate supply chain challenges, it is important to build a 'Crisis Team'. But a crisis team that does not have enough authority to make decisions is not useful. Retailers should have the confidence to leave key aspects of decision-making to employees below their management levels as these teams have first hand knowledge about ground-level activities. Research has highlighted Chinese retailers that have empowered those below management to take prompt action and decisions to address immediate concerns, and to avoid overwhelming already overburdened senior management.

- Implement real-time dynamic routing

Businesses should introduce real-time and dynamic routing capabilities to maximise staff-vehicle utilisation

capacity. Such capabilities not only increase delivery productivity and reduce the cost of fuel consumption, but also ensure businesses can efficiently plan multiple drops on a particular delivery route. Businesses should ensure the needs of vulnerable people are met as a priority. Hence, it's crucial to develop capabilities that allow emergency collections and deliveries while a driver is out on the road.

- Control price and reduce promotions

Increasing the price of essentials to manage margins is not a good idea. It will lead to high levels of customer disappointment, negative media coverage and potentially hefty fines from the government. Fortunately, most retailers are shrinking their margins further to keep the prices of essential commodities the same. Retailers need to introduce additional layers of control to ensure prices do not increase even by mistake. Brands should also avoid promotions, which can result in an increase in demand and pressure on manpower. Also, with lockdowns and travel bans, there is a limit to how much one can boost sales through promotions. It also gives an opportunity to shift investments in promotions to more vulnerable areas

like operations, inventory and last-mile delivery.

- Embrace the dark store strategy for online orders

Surging demands amid lockdowns make inventory management extremely difficult. One way to deal with this challenge is to open up 'dark stores', something that retailers in the US and UK have already started doing. These stores look like supermarkets but are closed to the customers. They can be treated as mini warehouses that are closer to customer locations. This ensures that pick-up orders are executed faster and automating pickups within these stores will make inventory even more efficient.

- Scrutiny on the data supply chain
- Onboard new platforms remotely

If businesses are willing to invest in new technologies to ensure rapid scalability, they should look for platforms with very short go-live cycles and can be implemented remotely without physical intervention.

Source : www.itproportal.com

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INFRASTRUCTURE SPENDING WILL DRAW THE ECONOMY FORWARD, SAYS NIRMALA SITHARAMAN

SHREYA NANDI

- The government has projected ¹ 111 trillion investments for 2020-25 to develop social and economic infrastructure to boost economic growth, under NIP
- The finance ministry had also said that it is critical to re-orient India's policy towards calibrated reconstruction of the economy

Finance minister Nirmala Sitharaman on Friday said that public spending on infrastructure will be one of the key factors that will revive economic growth that has witnessed a sharp contraction due to the outbreak of covid-19.

Speaking at a virtual event organized by Dr Syama Prasad Mookerjee Research Foundation, the minister said that macroeconomic fundamentals of the Indian economy remains firm, which is evident from three crucial factors— inflation figure well within monetary policy committee's target, highest inflow of foreign direct investment as well as forex reserves, at a time when the whole world is affected by the pandemic. However, factors such as delay policy making decisions can be bettered.

"A lot of power to pull the economy up will lie with the infrastructure sector. Among the four engines that will draw the economy forward, public spending on infrastructure will be that one engine on which I will be spending a lot of money, making sure the money is going down where it should," Sitharaman said, adding that the minister is regularly reviewing the progress of the projects under the national infrastructure pipeline

(NIP).

The government has projected ¹ 111 trillion investments for 2020-25 to develop social and economic infrastructure to boost economic growth, under NIP. As far as the funding of projects is concerned, National Infrastructure Investment Fund (NIIF) is one of the ways through which the infrastructure projects will be funded, she said.

"Rural non-agri rural activity are gaining strength and when money is being spent by public and private sector, it will have its spillover effect in the urban area. After all, rural products will have to go to urban centers...This will also draw the economy together and forward," she added. The finance minister's comment comes at a time when India's Gross Domestic Product (GDP) has contracted 23.9% on-year in the April-June quarter due to a stringent lockdown enforced across the country. Aided by easing of lockdown restrictions, India is now witnessing a 'sharp V-shaped recovery', the finance ministry said last week.

The finance ministry had also said that it is critical to re-orient India's policy towards calibrated reconstruction of the economy, with specific attention on agrarian supply chains, factor markets, infrastructure, start-ups, financial inclusion, skilling and health care. "Progress in these areas will sustainably boost economic growth in years to come," it had said.

Source : www.livemint.com

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3 WAYS TO PROTECT YOUR BUSINESS FROM SUPPLY CHAIN DISRUPTIONS

*Global responses to the Coronavirus may impact your supply chain.
Here's what you can do.*

MARIA HAGGERTY, CEO, DOTCOM DISTRIBUTION

As you navigate the fallout from the Coronavirus, you must consider the most efficient ways they can be planning for and responding to shifts in the supply chain in order to protect themselves from market disruptions. Lightning fast communications, a global supply chain, and faster time to market are hallmarks of today's interconnected business world. But like a pebble thrown into a pond, ripples spread out and affect other areas of the water. A problem in one area may have serious repercussions in another. To weather these storms, keep these critical strategies in mind:

Diversify your supply chain. : Suppliers face many risks, from economic shifts to natural disasters, pandemics, cyber threats and more. Supply chain diversification helps protect your business during these challenging times, and for that reason should be a part of your overall business plan on an ongoing basis—not just when disaster strikes.

Being without a robust supply chain at the ready can impact everything from operations to customer deliveries, causing time and money-costing disruptions. You can alleviate risk by exploring alternate resources in the event a problem arises with your primary supplier.

It's not always about securing the items you need at the lowest cost. More important is sustaining the continued receipt of goods. Breaking away from the norm by exploring whether you can source the products you need somewhere else can also yield fresh opportunities. For example, you might get the added benefit of finding new products to sell. Consider sourcing materials from local suppliers, too. Proximity comes with a host of potential advantages including reducing minimum buys, more control over your materials, reduced overall costs, and faster speed to market.

Proactively manage customer expectations. : Supply chain disruptions or modifications to import processes may impact the products you can offer, as well as create shipment delays and unanticipated costs. This won't just affect your overall sales, but how you time and manage product promotions. If such an interruption is likely to, or will affect your customers, communicate how they may be impacted quickly, clearly, and responsibly. In the era of transparency, this level of communication is valued and expected, and can increase your company's credibility. Messaging should also be consistent across whatever platforms you choose to communicate through. Many reports identify email as the preferred method of communication from brands.

Dotcom Distribution's annual eCommerce survey substantiates that reality for shipping notifications; however, the numbers are decreasing year over year, shifting toward text messages and in-app notifications. Further supporting this trend, a report on mobile consumer engagement in 2020 found 40 percent of consumers say

they have at least 50 unread emails in their inbox, but only four percent report having 50 or more unread mobile messages.

Earning the attention of customers can be a hurdle on its own, one remedy for which is earning trust. Coming full circle, this can be accomplished by establishing a pattern of good communication. In a 2019 brand trust study of more than 25,000 respondents across eight major global markets, 76 percent of consumers reported paying attention to communications from a brand they trust, valuing it almost as much as quality and value.

An abundance of communication and trust is just as urgent between brands and suppliers. Keep an open channel with your vendors. Being plugged into what's going on throughout the supply chain better equips you to set accurate, timely expectations for your customers about shipping delays, SKU availability, product changes, and more.

Identify when to adjust pricing, cost, or both. : Global responses to Coronavirus have already impacted the supply chain, and that may ultimately affect landed costs. Before determining when or whether to pass costs along to your clients, carefully consider what you can sell, how much you can sell, and what the associated costs are. Also evaluate different ways to reduce costs.

Think about focusing first on packing and shipping costs, as these may be the easiest areas to control or change. At my company, we help eCommerce brands optimize interior packaging and deliver—literally and figuratively—a specific customer experience. So, the first challenges we address are figuring out if and how we can change the experience and find less expensive or slower shipping methods.

Other cost reduction tactics include changing your product mix, switching vendors, introducing promotions, and ramping up marketing. If you have market share, you may need to maintain cost to retain your position and live with a smaller revenue stream. Your goal should be to mitigate overall costs in ways that don't necessarily affect bottom lines.

Position your business so that you're always prepared to make adjustments. Best case scenario, you'll never have to implement an emergency or backup plan, but being unprepared for the worst-case scenario is not a risk any business should take.

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

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MANAGING THE TIME- THE EFFECTIVE WAY OF ACHIEVING SUCCESS

TEK CHAND “MEHTAB”
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Before knowing about managing the time or Time Management. We must know what is time (Samay/ Waqt)?

“Mein kaise maan lun ki tumne Samay ka aavishkar kiya hai?

Tumne Samay ka sankshipt itihās likha hai. Samay ka koi itihās nahi hota,

Samay swayam itihās ki samiksha hai.

Samay iti ki parinīti hai. Samay gati hai, niyati hai, pragati hai. Anibhūti ka Vishay hai.

Samay reeti ka, neeti ka, preeti ka Vishay hai.

Samay sandharbh hai, sankalp hai, samvedna hai. Samay ek vidambana hai.

Samay nirpeksh hai, nirapad hai. Samay saral hai, viral hai, Samay hi garal hai.

Samay hi kriti hai, vkrati hai, aakriti hai. prakriti hai.

Samay sidh, siddhant aur siddhi hai.

Samay nyay, vidhi aur vidhan hai.

Samay hi sansad hai, Samay samvidhan hai.

Samay hi sakta hai. Sakta ki samajh hai.

Samay pratham nagrik hai. Samay hi samaj hai.

Samay barsat ki pehli boond hai, aus ka pehla kan.

Samay surya ka sandhya mein samarpan hai.

Samay pehla akshar, pehla shabd, pehli pankti, pehli kavita, pehla kavi hai, pehla sampadak.

Samay pehla guru hai, pehla granth.

Samay ko samjho, phir mujhe samajhna ki Samay kya hai?

Samay ek anvarat sidhi hai, jo wahan se prarmbh hoti hai, jahan se aadmi chadhkar aakash chhuna chahta hai.

“Ye to aadmi- aadmi per nirbhar karta hai ki woh Waqt ki barbadi kiye baigar use badi hi soojh boojh se kare istemaal, ye hi to gur hai, kamyabi ki seedhi dar seedhi

chadhna aur zindagi mein apni manzil tak pahunchane ka”

Time Management for Effective Productivity : Time is the essence of one’s life. How to utilize time effectively for meaningful performance is the pertinent question to be asked from each and every individual. Every individual has a day to his credit but he has to make use of the day in an effective manner. The people who have been utilizing the time effectively in performance of a profession reach to the ladder of their success. Though some professionals take much time to attain the goal of their life to be perfect and have name and fame. Generally, it is seen that professionals like artists who have all the time creative activity to be performed, make use of their time judiciously and altogether change their life style and live longer life without letting themselves to be idle even for a blink of a moment. On the contrary, we find busy executives always running short of time since they have to perform lot of jobs in minimum possible time and that is the point of time where they have to manage their time in an effective manner. So many things are to be done in a day’s time and that is where exactly **time management** comes into picture.

In an ongoing organization, daily targets are fixed which are to be met within limited working hours available to an every individual. Organization has to set up certain targets to be met and thus productivity has to be increased. Productivity is equally related to efficiency and efficiency again is related to time. Efficiency backed by proper management of time to some extent leads to increase in the productivity. But the job done in an effective manner certainly leads to meaningful productivity to a great extent. Thus the phenomenon of time management is of utmost necessity. Every job must be done in an effective manner as lot of time is lost in producing poor quality things rather than doing the things in correct manner for the first and the last time so that time is best utilized for the things to be done in the right way.

In the industrial context , time & motion study and method study is carried out on a continuous basis to have the scope of reducing time of performance of a

particular activity. In the process new ways and means of doing the things are evolved which can take lesser time to have better productivity. Always the traditional or conventional means are adopted to do the job but innovative and creative methodology could bring drastic results wherein the job is done in lesser time and the quality of job so achieved is also better. Thus award and reward schemes are introduced in an organization for finding out the new ways and means of carrying out the job in minimum possible time frame in the organizational hierarchy as every individual has man hour cost.

Managing Own Time : Every individual has to plan for their own job to be performed in a day. Planning in advance certainly adds to the effective utilization of time and ultimately leads to productivity. In today's world, the life style has changed substantially where everything has to be performed in easy way consuming less time to keep pace with the race in this very existing competitive environment, To achieve this pace, one has to manage his own time depending upon the availability and requirement and environment wherein he has been delivering the goods. If the time is not managed judiciously, lot of things would be left undone and the productivity will be affected leading to incompetence in one's career.

Time is the life line in every individual. A study has revealed that in a life span to say of seventy years, by and large an individual does work effectively only for twelve years where as the remaining life span is spent like :

- Twenty five years in sleeping
- Eight years in studying and acquiring education
- Seven years in recreation and holidaying
- Six years in taking rests and having illness
- Five years in travelling to place and commuting from home to work place and back
- Four years in eating and drinking
- Three years in preparing and getting ready for the work

Since we have been left with only limited time for effective work, the same must be utilized in both efficient and effective manner to achieve goal in one's life.

Effective Management of Time : Principles of effective time management includes:

- Being aware of value of time
- Elimination of wasteful activities

- Alternatives
- Combining similar activities
- Division of labour

In order to become effective, one needs job effectiveness as well as personal effectiveness. Since one has to depend on limited resources available at a point of time and at the same time resources cannot be created to suit one's need and requirement, one of the important areas of personal effectiveness is to identify the resources and make an optimum utilization in the resource crunch situation existing now-a-days.

It is rarely realized that time is a hidden important resource to be utilized in resourceful manner so that maximum could be achieved in minimum possible time duration. Even though twenty four hours are available to everyone . It is the manner in which the time is utilized by people, which explains the wonder why one is a millionaire and other is struggling hard in life time and achieves the bare minimum. At the same time, one is high and another low in hierarchy of an organization.

The importance of time has been recognized by saints, poets, thinkers, intellectuals for centuries together. It has rightly been said by way of the following quotes:

- Time and tide wait for none. Don't postpone, do it today itself.
- Art is long and time is fleeting. Keep busy in finishing the job.
- A stitch in time saves nine. Always perform in effective manner.
- Time is money. Conserve it.
- I killed time . now time is killing me. Avoid the situation like idling.

The inference is that one has to make best or rather optimal usage of his time.

Characteristics of Time as a Resource : Time is unique phenomenon which is entirely different from other resources which could be managed by deployment and hiring of personnel. Time can be explained in following manner:

- It is the scarcest resource which can neither be extended nor supplemented.
- It is highly perishable as the time lost can never be regained.
- It can neither be bought at any price nor could be sold as time is same for all.
- It is irretrievable as the time is not utilized in effective manner amounts to waste of

irrevocable energy.

- It can neither be replaced nor be substituted like other resources which can be changed depending upon the requirement.
- It is irreversible as the time spent once cannot be retrieved back.
- It is realistic since time has the fixed duration.

The peculiarity of time resource is that everyone has got equal time to his credit.

Self Management Means Time Management : Time management is misnomer as in real sense time cannot be managed. Time management in fact means self management. Stress must be given on self development of personnel of the organization to make best utilization of the available manpower resources. Self management requires analysis of the followings:

- Where does my time go?
- What are time interrupters and wasters?
- How can there be a better utilization of time available?

The following factors have also been generally identified which contributes to major time-wasters and interrupters:

- Being unorganized
- Lack of planning
- Confused responsibility and lack of role clarity
- Unrealistic time estimates
- Unscheduled/ unwelcome visitors
- Crisis management
- Cluttered desk
- Involvement in routine and trivial
- Inability to say no
- Procrastination, postponement
- Lack of self discipline

Effective Self Management for Better Time Management : This can be achieved by adopting the following measures:

- Keep a diary. Don't trust memory
- Do it now
- Distinguish between "important" and "urgent"
- "Urgent", has to be done now
- Do right things than doing things right

- Delegate, think what will happen if I don't do this activity
- Develop subordinates
- Act for today
- Arrange activity according to priorities
- Plan time rather than work
- Group similar activities
- Don't spend more time than the result deserves
- Avoid indecision
- Break long and unmanageable jobs in manageable pieces
- Have an agreed arrangement with boss and subordinates for utilization of every body's jobs
- Learn to deputise, organize and supervise
- Enjoy leisure

Managing Time To Achieve Success : The ladder of success in one's life is steady and strong once the management of time skill is acquired by oneself. In a calendar day, we have twenty four hours at our disposal. But these hours either can be utilized in doing the things in effective way or it can be wasted by way of doing useless activity and idling.

One has to see to it that these hours can be brought in use by depending upon one's profession. It has also been viewed that professionals are always short of time since they have lot more things to do at their disposal and have in their mind to perform so many activities which they fore see. It is also seen that professionals, who have mastered their trade never feel boredom in their life time and attain longevity as they are always busy in doing their tasks which give them inherent happiness and pleasure leading to a sort of disciplined life style.

We can observe that renowned artists or musicians or actors lead longer life as they derive lot of pleasure and self satisfaction on both counts while performing their art and simultaneously getting public fame out of their genius art they demonstrate to the public. Whereas on the other hand the normal human being do not reach up to the level of proficiency in their life cycle as compared to the artists and artisans.

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BRANCH NEWS

■ ALWAR BRANCH

■ BANGALORE BRANCH

ALWAR BRANCH

Indian Institute of Materials Management , Alwar Branch , the first branch of IIMM to complete its accounts for the FY 2019-20 ,duly audited by the National auditors of the IIMM.



The branch has also conducted its AGM on 31/8/2020 at Hotel Moti Dungri Place, Alwar.

The Chairman of the branch Mr. G S Rathore welcomed the members attending the AGM. He mentioned that the last Major program we conducted on 7/2/2020 , which was sponsored by Mrs. Bhagwati Meena and Mr. Lalit Raj Meena . After the program the branch scheduled its annual day celebration on 25/4/2020. However because of spread of CORONA , the branch has to postpone it till the situation becomes the normal.

After welcome speech the Chairman presented the annual accounts before the general body. The accounts were passed by a voice vote. It was proposed by Sh. Pradeep Sharma and seconded by Sh. Jayant Jain. The Chairman specifically mentioned that the Branch has the FDR /Debt funds /interset on FDs etc in the bank of about Rs.5.22 lakhs and credit of same goes to Sh. L R Meena founder Chairman of the branch.

Mr. L R Meena informed that as on 31/8/2020 the membership of the branch is 97 and made an appeal to the members present that we should make a target of 200 by March 2021.

Mr. Meena further spoke on the education and new admissions. This semester the branch has the highest admissions keeping in view of past admissions during last five years.

At the end it was decided to conduct few programmes on Supply XChain Management, Stores & Inventory Management and Import / export management. The dinner was served to members after the AGM.



CONGRATULATIONS : Dr. Ramavatar Meena, Principal Scientist, CSIR-CSMCRI, has been awarded the prestigious Fellow of the Royal Society of Chemistry (FRSC) in recognition of his contribution to the field of value addition of Indian Seaweed biomass using simple and green chemistry approaches. Dr. Meena is known for his seminal work on the development of indigenous processes technologies for the industrial production of commercially important seaweed products & functional biomaterials for industry uses. His outputs are the big achievements to uplift the country and making India self-dependent on seaweed processing and their valuable products. His work will open new areas for Indian seaweed industries and also help to establish new seaweed industries for commercial production. His work also provides big opportunity to generate employment to coastal population in India through seaweed farming.

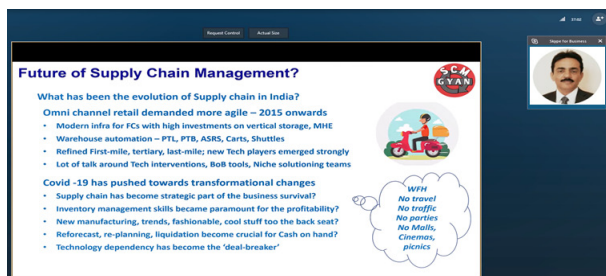
He is extensively working on an important institute mandate known as value addition of Indian seaweed biomass through chemical intervention. He is mainly developing downstream processing for seaweed biomass to obtain commercially important seaweed products such as agar, agarose, carrageenan, alginates, plant biostimulants/fertilizers, etc. He is also working on the functional modifications of natural polymers specifically seaweed polysaccharides to prepare novel biomaterials such as biosensor, self-healable gel, foot care gels, bioactive seaweed gels, hydrophobic biomaterials, super adsorbents, drug carriers, porous aerogel membrane for separation, biodegradable packaging materials, etc. through chemical and physical interventions. In brief, he has authored more than 70 papers in prestigious journals, 19 patents, 6 book/chapters on seaweed biomass, and 48 invited talk/conference papers. In addition he is the pioneer in developing indigenous technologies for the production of superior quality seaweed products, and he has successfully developed process technologies for more than 10 commercially important seaweed products, which have been successfully transferred to more than fourteen (15) industries for commercial production of these seaweed products. He is recipient of several awards such as DST-SERC Fast Track Scheme for Young Scientists (2006), DSTBOYSCAST Fellowship 2009, CSIR Award for S&T Innovations for Rural Development for

the Year 2012, Associate Fellow Gujarat Science Academy, **Life Member of IIMM**, CSIR-CSMCRI Best Technology Award -2016 & 2018; IIMM outstanding Research Paper, etc.

BANGALORE BRANCH

20.08.2020 – INHOUSE TRAINING PROGRAM : Indian Institute of Materials Management, Bangalore Branch organized an **Online Inhouse Training Program(paid)** for executives of Robert Bosch Engineering and Business Solutions Private Limited, Bangalore (RBEI) on 20th August 2020 on **‘Future of Supply Chain, Role of Technology & its Importance’**. **Dr. Anil Chinnabhandar, Senior Vice President, Landmark Group**, spoke on how the various technological interventions like RFID, Robotics, Artificial Intelligence, Machine Learning, Block Chain are influencing and transforming the Supply Chain. During this lively session, Dr. Anil presented lucidly how the challenges thrown by the Covid 19 Pandemic have accentuated the need for accelerated adaptation to technology in the current Supply Chain Business Models and the technologies that will drive the future. It was an outstanding presentation attended by 80 plus Supply Chain executives and the feedback of participants is excellent. B. Jayaraman, Chairman, Bangalore Branch thanked Dr. Anil Chinnabhandar for sparing his valuable time and **Mr. A Shafi, and Mr. Umesh Bisnal, Senior Management**, RBEI for providing the opportunity. RBEI have expressed their interest to .associate with IIMM, Bangalore for further programs on Supply Chain Topics.

Presentation



Feedback



OBITUARY



A N CHAUDHARY

We are deeply grieved to know that a dear friend and well wisher, a founding era member of IIMM Chandigarh Branch, Mr A N Chaudhary, joined Lord Almighty on his eternal journey.

Chaudhary Sahib was a down to earth, noble human being, always cool, soft spoken and ever ready to render a helping hand. A pillar of strength for IIMM Chandigarh Branch , who actively and dedicatedly served IIMM since inception till last for 36 long years, 1984 to 2020, unmindful of the position, he held. A self made man, he reached the level of Purchase Manager in Pfizer Chandigarh Plant in 80's, left his job to succeed in business till last.

Mr Amar Nath Chaudhry was one of the founder member of Chandigarh branch and contributed significantly for the growth of IIMM Chandigarh branch in its initial stages. Since 1984 till his death, he remained in the executive of branch in different capacities. His mature advise and tactics solved many problems and contribution to the growth of branch. During his tenure as Branch Chairman, branch had purchased 2nd office of 1200 Sq feet at Peer Muchhalla and it was developed ultra modern class room and office for students. He was honoured with Life Achievement Award by Chandigarh branch for his untiring efforts and contribution for IIMM. He participated number of Natcom and National Council meetings.

Our heartfelt condolences to Chaudhary family. May the departed soul rest in peace in the Heaven's Choicest Gardens.



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EXECUTIVE HEALTH

5 QUICK HOME REMEDIES FOR SORE THROAT AND OTHER COMMON COLD SYMPTOMS

People are likely to experience a sore throat every once in a while, especially during seasons like monsoon and winters. Here are a few home remedies for a sore throat and other symptoms of a common cold.

5 quick home remedies for sore throat and other common cold symptoms.

KEY HIGHLIGHTS

- The problem of a sore throat is common among people especially during the monsoon season
- A sore throat may cause pain and uneasiness and end up affecting the overall mood of a person
- But there are several options you can opt for to deal with a sore throat and other cold symptoms naturally

Sore throat is a common symptom where the throat experiences painful dryness, irritation, tenderness, itchiness or even burning for a prolonged period of time. It is, in fact, one of the most prevalent symptoms out there and affects millions of people each year. A person with a sore throat may go through difficulties such as red tonsils and experiencing distress in talking and swallowing. The most common causes of sore throat include colds, flu, and other viral and infections, allergies, etc. Sometimes, symptoms such as cough, nasal congestion, headache, appetite loss, hoarse voice and sneezing may accompany the condition of a sore throat. The good news is, you can treat most sore throats with home remedies.

Home remedies for sore throat

Although there are medications that can help you get rid of the trouble in no time, it is advisable to go for natural treatments that you can find at home. You can refer to these 5 home remedies that will prove to be extremely effective for you:

- **Salt water gargle:** This is the most common method of dealing with a sore throat. It provides safe and immediate relief and is also effective in eliminating bacteria present in the throat.

To prepare this, take a cup of warm water and mix 1/2 tsp of salt in it. Mix well and gargle.

- **Honey:** Honey has anti-inflammatory and anti-bacterial properties. It can help a sore throat extensively by reducing inflammation and soothing the throat.

To prepare this, mix 2 tbsp of honey in a cup of warm water. Drink the mixture for at least 5 times a day at regular intervals.

- **Chamomile tea:** Soothe your throat with the amazing chamomile tea that is known for its medicinal excellence. It has anti-inflammatory, astringent and antioxidant properties that can be very effective in symptoms such as a sore throat, cough, cold and sneeze.

To prepare chamomile tea, add 1 tbsp of loose chamomile tea in 1 cup of water boiled water and let steep for 5 minutes. Drain and drink.

- **Lemon:** This can help to loosen up the mucus and provide pain relief to a sore throat. The vitamin C present in it helps to boost the immune system and fight against infections.

To prepare this, mix 1 tsp of lemon juice with a cup of warm water and drink.

- **Baking soda gargle:** This is an effective method that can help you prevent the increase of fungi and yeast in your throat, thereby, blocking out further infection.

To prepare this, you need to take 1/8 tsp of salt, 1/4 tsp of baking soda and 1 cup water. Mix the ingredients together and gargle. Repeat at an interval of at least 3 hours.

Source : www.timesnownews.com

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