BRANCH ACTIVITIES

AHMEDABAD BRANCH :

LUCKNOW BRANCH

KOLKATA BRANCH

MUMBAI BRANCH : Industrial Visit

PUNE BRANCH

VADODARA BRANCH : Mr.L.P.Patel welcoming Mr. Nehal Dave with Flower Bouquet
Dear Professionals,

Season’s Greetings from National President!!!

At the outset, I along with IIMM Fraternity, pray to almighty for giving enough strength and solidarity to the aggrieved families of Martyrs, who have lost their life in the recent Pulwama Terrorist Attack on February 14, 2019. You are requested to help the martyrs in any which way possible be it small or big.

IIMM Bilaspur branch has recently conducted one day Central Regional Conference in a very befitting manner, on the theme “Emerging trends in Materials Management” followed by NC meeting. I congratulate Chairman, IIMM Bilaspur Branch and his team for successful Conference and excellent arrangements for NC meeting.

IIMM Chennai Branch has organised their Signature Event “Spectrum 2019” at Chennai in a very professional manner. IIMM Trivandrum Branch has also conducted one day National Seminar at Trivandrum. I congratulate Chairmen of both the Branches and their teams for putting up a brilliant show.

I would like to request your support for enhancing the Membership through Enrolment of new Members as well as by renewals, to strengthen the Membership Base in this regard.

I also seek your suggestions for the betterment of the Institute.

I wish you and your family a very happy Holi, festival of colours.

Yours

G. K. SINGH
National President - IIMM
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From the Desk of Chief Editor

Dear Members,

Hon’ble Minister Piyush Goyal for Railways & Coal and the acting Finance Minister had presented Interim Union Budget 2019-20 on February 1, 2019. The Interim Budget 2019 holds the agenda of all-inclusive growth of the nation through various ongoing schemes and new schemes.

Indian Economy is estimated to grow at 7.2% as compared to 6.7% in the previous year. The fiscal deficit has been targeted to be brought down to the level of 3.4% in 2019-20 considering the economic support given to Farmers. The Current Account Deficit (CAD), is likely to be only 2.5% of GDP this year. India’s import dependence on crude oil and natural gas has been a source of big concern to our Government.

Growing Economy, Government’s favourable policies, Ease of Doing Business, and robust business environment have ensured Foreign Direct Investments to flow in the country to the tune of USD 239 billion over the last 5 years.

Govt. has taken many steps to strengthen the MSME Sector. Loan approval up to Rs 1 Crore in 59 Minutes has been commendable. The requirement of sourcing from SMEs by Government enterprises has been increased to 25% while it was 20% earlier. MSMEs have been given an opportunity to sell their products through Government e-Marketplace (GeM), created by Government. This has transformed public procurement in terms of Transparency, Inclusiveness and Efficiency.

Finance Ministry has given a major tax benefit to individual tax payers by doubling the threshold tax exemption limit from Rs 2.5 Lakh to Rs 5 lakh and increasing the standard deduction to Rs. 50,000 from Rs. 40,000. The proposal will benefit 3 crore middle-class tax payers.

Exemptions from for small businesses has been doubled from Rs 20 lakh to Rs 40 lakh. Further, small businesses having turnover up to Rs 1.5 crore have been given an attractive composition scheme wherein they pay only 1% flat rate and have to file one annual return only. Similarly, small service providers with turnover upto 50 lakhs can now opt for composition scheme and pay GST at 6% instead of 18%.

To promote “Make in India” initiative, Government has abolished duties on 36 capital goods. A revised system of importing duty-free capital goods and inputs for manufacturers and exporters has been introduced, along with introduction of single point of approval under section 65 of the Customs Act.

To provide an assured income support to the small and marginal farmers, Govt. has initiated “Pradhan Mantri Kisan Samman Nidhi (PM-KISAN)” under which Govt. will provide direct income support of Rs 6000/- per year to vulnerable landholding farmer families, having cultivable land upto 2 hectares.

42 crore workers from the unorganised sectors such as street vendors, rickshaw pullers, construction workers, handloom, leather and other similar occupations with monthly income of Rs 15000/-, have been provided a mega pension yojana namely ‘Pradhan Mantri Shram–Yogi Maandhan’. This pension yojana shall provide them an assured monthly pension of Rs 3,000/- from the age of 60 years on a monthly contribution of a small affordable amount during their working age.

This budget has shown the concern towards pollution and to make India a pollution free nation, launch of Electric Vehicles is on cards. India will lead the world in the transport revolution through electric vehicles and energy storage devices, bringing down import-dependence and ensuring energy security for our people.

(DR. M.K. BHARDWAJ)
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**BUDGET SUMMARY WITH MAJOR HIGHLIGHTS OF THE INTERIM BUDGET 2019-20**

**INTERIM BUDGET 2019-20 PRESENTED IN PARLIAMENT TODAY HAS A MAJOR SCHEME FOR FARMERS AND PROVIDES FOR INCOME TAX SOPS THIS INTERIM BUDGET IS TO BE VIEWED AS A MEDIUM FOR A PROGRESSIVE PATH FOR THE COUNTRY, THE FINANCE MINISTER SAYS SHRI PIYUSH GOYAL SAYS GOVERNMENT HAS BROUGHT DOWN AVERAGE INFLATION TO 4.6%, LOWER THAN THE INFLATION DURING THE TENURE OF ANY OTHER PREVIOUS GOVERNMENT.**

Interim Budget 2019-20 was presented in Parliament today by the Union Minister for Finance, Corporate Affairs, Railways & Coal, Shri Piyush Goyal. Besides having a major Scheme for the farmers, it provides tax sops and sets the Developmental Agenda for the years to come.

A New Deal for 12 Crore Small and Marginal farmers with direct income support, a path breaking Pension initiative for 10 Crore unorganized sector workers, exempting income up to Rs 5 lakhs from Income Tax, reforms in stamp duty, highest ever budgetary allocation of Rs 3 lakh crore for Defence, record allocation of funds at Rs 58,166 crore for North Eastern Areas, a new AIIMS for Haryana, single window clearance for Indian film makers at par with foreigners and higher budgetary allocations for Education, Health, Infrastructure and for the welfare of weaker sections including Scheduled Castes and Scheduled Tribes, a Separate Department of Fisheries for welfare of 1.5 crore fisherman are some of the major highlights of the Interim Budget 2019-20.

**Major Schemes**

New Scheme- namely “Pradhan Mantri Kisan Samman Nidhi (PM-KISAN)” to extend direct income support at the rate of Rs. 6,000 per year to farmer families, having cultivable land upto 2 hectares is announced.

While presenting the Interim Budget 2019-20, the Union Minister for Finance, Corporate Affairs, Railways & Coal, Shri Piyush Goyal said that “our Government is launching a historic programme PM-KISAN with an outlay of Rs.75,000 crore for the FY 2019-20 and Rs.20,000 crore in the Revised Estimates of FY 2018-19”.

Under this Government of India funded Scheme, Rs.2,000 each will be transferred to the bank accounts of around 12 crore Small and Marginal farmer families, in three equal installments. This programme would be made effective from 1st December 2018 and the first installment for the period upt031st March 2019 would be paid during this year itself, Shri Piyush Goyal said.

To provide sustained and focused attention towards development of Fisheries, the Government has decided to create a separate Department of Fisheries. Finance Minister said that through the measure, the Government wants to promote further growth over 7% to promote livelihood of about 1.45 crore people dependent on the sector.

The Finance Minister announced 2% interest subvention to the farmers pursuing the activities of animal husbandry and fisheries, who avail loan through Kisan Credit Card. Further, in case of timely repayment of loan, they will also get an additional 3% interest subvention.

**Allocation of Rs.750 crore for RashtriyaGokul Mission**
has been announced for the current year itself. Setting up of “Rashtriya Kamdhenu Aayog” to upscale sustainable genetic upgradation of cow resources and to enhance production and productivity of cows has also been announced. The Aayog will also look after effective implementation of laws and welfare schemes for cow.

To provide pensionary benefits to at least 10 crore labourers and workers in the unorganised sector a new Scheme called ‘Pradhan Mantri Shram-Yogi Maandhan’ is announced. The Finance Minister said that within next five years it would be one of the largest pension schemes of the world. A sum of Rs.500 crore has been allocated for the Scheme. Additional funds will be provided as needed, Shri Goyal added. The scheme will also be implemented from the current year, he said.

**Tax Benefits** : Individual taxpayers having taxable annual income up to Rs.5 lakhs will not be required to pay any income tax. The Finance Minister said that persons having gross income up to Rs. 6.50 lakhs are not required to pay any income tax if they make investments in provident funds, specified savings and insurance etc. Additional deductions such as interest on home loan up to Rs. 2 lakh, interest on education loans, National Pension Scheme contributions, medical insurance and medical expenditure on senior citizens etc, are also provided for in the Interim Budget 2019-20. Thus tax benefit of Rs. 18,500 crore is proposed to be provided to an estimated 3 crore middle class and small taxpayers comprising self employed, small business, small traders, salary earners, pensioners and senior citizens.

For salaried persons, Standard Deduction is being raised from the current Rs.40,000 to Rs.50,000. This will provide additional tax benefit of Rs. 4,700 crore to more than 3 crore salary earners and pensioners.

Exemption on levy of income tax on notional rent on a second self-occupied house is also now proposed. Currently, income tax on notional rent is payable if one has more than one self-occupied house.

TDS threshold on interest earned on bank/post office deposits is being raised from Rs. 10,000 to Rs.40,000.

TDS threshold for deduction of tax on rent is proposed to be increased from Rs. 1,80,000 to Rs.2,40,000 for providing relief to small taxpayers.

**Inflation** : The Finance Minister said that the Government has been successful in bringing down average inflation to 4.6% over last five years, which is lower than the inflation during the tenure of any other Government. In fact Inflation in December 2018 was down to 2.19% only. Shri Goyal said if we had not controlled inflation, our families would have been spending around 35-40% more today on basic necessities such as food, travel, consumer durables, housing etc. The average rate of inflation during previous five years 2009-2014 was a backbreaking 10.1%, he pointed out.

**Fiscal Deficit** : The fiscal deficit has been brought down to 3.4% in 2018-19 RE from the high of almost 6% seven years ago, the Finance Minister mentioned. He said, the Current Account Deficit (CAD), against a high of
5.6% six years ago, is likely to be only 2.5% of GDP this year. “We contained the fiscal deficit notwithstanding the Finance Commission’s recommendations increasing the share of the States from 32% to 42% in central taxes, which we accepted in the true spirit of cooperative federalism, thereby transferring significantly higher amounts to the States”, Shri Goyal said.

Growth and FDI: The Finance Minister Shri Piyush Goyal stated that a stage for high growth in decades to come, has now been set, after a wave of next generation path breaking structural reforms over the last five years, including introduction of Goods and Services Tax (GST) and other taxation reforms.

The country witnessed its best phase of macro-economic stability during the last five years. “We are the fastest growing major economy in the world with an annual average GDP growth during last five years higher than the growth achieved by any Government since economic reforms began in 1991. From being the 11th largest economy in the world in 2013-14, we are today the 6th largest in the world”, the Finance Minister asserted in his Opening Remarks of his Budget speech.

Shri Goyal said that due to such a stable and predictable regulatory regime, growing economy and strong fundamentals, India could attract massive amount of as much as $239 billion of Foreign Direct Investment (FDI) during the last 5 years, when most of the FDI was allowed to come in through the automatic route.

Enhanced allocations for major Schemes: Announcing an allocation of Rs.60,000 crores for MGNREGA for Budget Estimates 2019-20, the Finance Minister said that additional allocations will be made, if required.

Pradhan Mantri Gram SadakYojana (PMGSY) is being allocated Rs.19,000 crore in BE 2019-20 as against Rs.15,500 crore in RE 2018-19. During the period 2014-18, a total number of 1.53 crore houses have been built under the Pradhan MantriAwasYojana, he announced.

By March, 2019, all households will be provided with electricity connection. Till now, 143 crore LED bulbs have been provided in a mission mode which has resulted in saving of Rs.50,000 crore for the poor and middle class.

He said through the world’s largest healthcare programme, Ayushman Bharat, to provide medical treatment to nearly 50 crore people in the country, around 10 lakh patients have already benefited through free treatment for medical treatment which would have otherwise cost them Rs. 3,000 crore. Lakhs of poor and middle class people are also benefiting from reduction in the prices of essential medicines, cardiac stents and knee implants, and availability of medicines at affordable prices through Pradhan Mantri Jan AushadhiKendra.

Shri Goyal also said that 14 of the 21 AIIMS operating or being established in the country presently have been announced since 2014. He also announced setting up of a new - the 22nd AIIMS in Haryana.

Allocation for Integrated Child Development Scheme (ICDS) is being increased from Rs.23,357 crore in RE 2018-19 to Rs.27,584 crore in BE 2019-20.

A substantial increase is proposed in the allocation for welfare of the Scheduled Castes and Scheduled Tribes. The allocation of Rs.56,619 crore made in BE of 2018-19 for Scheduled Caste, further increased to Rs.62,474 crore in RE is proposed to be enhanced to Rs.76,801 crore in BE for 2019-20, an increase of 35.6% over BE of 2018-19. For the Scheduled Tribes also, proposed allocation in 2019-20 BE is Rs.50,086 crore as against Rs.39,135 crore in BE 2018-19, an increase of 28%.

The Finance Minister said that a Welfare Development Board to frame special strategies for the benefit of the hard-to-reach De-notified, Nomadic and Semi-Nomadic communities will be set up under the Ministry of Social Justice and Empowerment. He said that a Committee under NITI Aayog will also be set up to complete the task of identifying De-notified, Nomadic and Semi-Nomadic communities not yet formally classified.

Shri Goyal said under the UjjwalaYojana aiming delivery of 8 crore free LPG connections, more than 6 crore connections have already been given and the remaining will get free gas connections by next year.
The Finance Minister announced that a National Artificial Intelligence Portal will also be developed soon as a part of the National Programme on ‘Artificial Intelligence’.

The Department of Industrial Policy and Promotion will now be renamed as the Department for Promotion of Industries and Internal Trade.

The Finance Minister stated that the Government e-Marketplace (GeM), created by the present Government two years ago, resulted in average savings of 25-28% and the platform will now be extended to all CPSEs. Transactions of over Rs. 17,500 crore have taken place so far. The Finance Minister announced that for the first time, the country’s Defence Budget will be of over Rs.3 lakh crore.

The Finance Minister, Shri Piyush Goyal pointed-out that domestic air traffic passengers have doubled during the last five years, leading to large number of jobs also being created. The number of operational airports has crossed 100 with the commissioning of the Pakyong airport in Sikkim. Arunachal Pradesh came on the air map recently and Meghalaya, Tripura and Mizoram have come on India’s rail map for the first time.

Capital support from the budget for Indian Railways is proposed at Rs.64,587 crore in 2019-20 (BE). The Railways’ overall capital expenditure programme is of Rs. 1,58,658 crore. The Finance Minister, who is also holding the portfolio of Railway Ministry, announced that the Operating Ratio is expected to improve from 98.4% in 2017-18 to 96.2% in 2018-19 (RE) and further to 95% in 2019-20 (BE).
India’s installed solar generation capacity has grown over ten times in last five years. Stating this, Shri Goyal said that “our commitment to promote renewable energy is reflected in setting up the International Solar Alliance, the first treaty based international inter-governmental organisation headquartered in India. This sector is now creating lakhs of new age jobs, he added.

The Finance Minister announced that in Entertainment industry, which is a major employment generator, regulatory provisions will now rely more on self-declarations. To promote entertainment industry, the Single window clearance for ease of shooting films, now available only to foreigners, will also be made available to Indian filmmakers. “We will also introduce anti-camcording provisions in the Cinematograph Act to control the menace of piracy”, he said.

Saying that “We are poised to become a Five Trillion Dollar Economy in the next five years and aspire to become a Ten Trillion Dollar Economy in the next 8 years thereafter”, Shri Piyush Goyal said that there has been a Growth of 18% in Direct Tax Collections in 2017-18 and increase in tax base by as many as 1.06 crore people filing income tax returns for the first time in FY 2017-18, mainly on account of demonetization.

In all the total expenditure is to increase from Rs.24,57,235 crore in 2018-19 RE to Rs.27,84,200 crore in 2019-20 BE. A rise of Rs.3,26,965 crore or approximately 13.30%. This reflects a high increase considering low inflation. The fiscal deficit of year 2019-20 is estimated to be 3.4% of GDP.

The Finance Minister pointed out that after completion of the fiscal deficit consolidation programme, the Government would now focus on Debt consolidation.

He said “We have maintained the glide path towards our target of 3% of fiscal deficit to be achieved by 2020-21. India’s Debt to GDP ratio was 46.5% in year 2017-18. The FRBM Act prescribes that the Debt to GDP ratio of the Government of India should be brought down to 40% by 2024-25.

“Along with completion of the fiscal deficit consolidation programme, we will now focus on Debt consolidation”, he added.

Source: PIB
The commerce ministry is working on several measures, including formulating an integrated plan and setting up of a digital platform, to promote growth of the logistics sector, a top government official said today.

Commerce Secretary Rita Teaotia said that the sector holds enormous opportunities to boost economic growth of the country and these measures would also help cut transaction costs and time of traders.

All economic activities including exports and manufacturing are linked with logistics and its efficiencies would help improve economic development, she said here at the Global Logistics Summit.

“We are working on a short and medium term integrated plan on logistics under the overall umbrella of a policy framework. We are also working on an integrated digital platform that would be a single window system where all stakeholders are able to access,” Teaotia said.

She also said that the ministry is engaging with the state government to improve logistics efficiencies.

The secretary added that these initiatives are important as the cost of logistics for India is about 14 per cent of its GDP and it is far higher as compared to other countries.

She called for setting a goal to reduce this to 10 per cent of the GDP.

“A 4 per cent increase has enormous capacity to move the economy,” she added.

The newly created logistics department, headed by Special Secretary Binoy Kumar, under the commerce ministry is working on these initiatives.

Speaking at the summit, Commerce and Industry Minister Suresh Prabhu said that the government is investing in infrastructure sector to improve logistics.

“Our idea is that we must put 10 per cent of the GDP into infrastructure and that we need to do year after year,” he said.

He said that the challenge is to bring different modes of transportation into one single actionable point.

Prime Ministers Economic Advisory Council Chairman Bibek Debroy said that exports play a major role in promoting economic growth of a country.

He said improvement in procedures would help boost exports and imports.

India is a largely an informal, unorganised economy and this principle exists in every sector including in exports, he said adding there are several improvements that are possible including in the area of procedures, “if I have large scale organised players”.

Debroy also said that the council is working on a document to help the commerce ministry on logistics sector.

He said that there are several complaints about procedures and that would improve only when there is a full fledged Goods and Services Tax (GST).

He added, “We have export incentives and those did not become transparent until we have a full fledged GST which supplants and subsumes all the other indirect taxes.”

Efficient logistics is critical for countries like India to harness trade and facilitate greater and faster integration with both the domestic as well as world economy.

Prabhu said that keeping this in mind, 56 new airports will become functional in the next few years.

Indian logistics industry is estimated at around USD 215 billion, which is growing at over 10 per cent annually. PTI RR SBT SBT

This is unedited, unformatted feed from the Press Trust of India wire.

Source : PTI
Warehouses have existed always as the mid-point storage stop for commodities in their journey from the consumer durable giants to your shopping bag. However, the game of warehousing in India has evolved to include huge technological advancements and equally mammoth proportions of investments.

The Changing Face of Warehousing in India: Warehousing in India has travelled far, from being glorified godowns to the modern, technically fitted floors with computerized specifications. The formerly concrete or low-grade steel godowns are now increasingly being replaced by pre-engineered, factory produced steel structures which are often assembled at a location. These modern warehouses are insulated, ventilated and climate-proof with round the clock surveillance and standard quality and safety procedures. In short, warehousing in India has evolved into a complete logistics friendly infrastructure system and the industry size is chalked at Rs. 560 billion, as per a report by Ernst & Young and the CII Institute of Logistics.

The burgeoning e-commerce industry has made way for dynamic changes in the warehousing sector developing them into sophisticated stockrooms with advanced, real-time tracking mechanisms and other state-of-the-art facilities without which e-tail would still have been a dream. As reported by Ernst & Young and CII Institute of Logistics, the warehousing sector is growing at a rate of 10% per annum and within this, the warehouses catering to industrial and retail clients claim the maximum share of 55%.

Factors Affecting Growth: In keeping with the demand, warehousing related sectors such as real estate and construction costs also have seen an upward trend, hence warehouses are now looking at optimum utilization of space per square feet along with options of more economical yet sturdier structures. Here comes the evolution of warehouses into cargo hubs. Cargo hubs are multi-client storage units where logistics operators shift from single company warehouses to multi-client and multi-product models.

This is also advantageous in the GST scenario. The highly-defragmented warehousing industry in India stands to benefit further from the GST by levelling the playing field for both organized and unorganized players. Besides, GST will reduce and consolidate warehousing into strategic locations and thereby aid in logistical cost efficiency; it would also lead to better inventory control and help in forecasting demands accurately; it would lead to large-scale technology implementation which is not feasible in smaller, scattered warehouses; thus leading to sophisticated, organized and efficient warehousing industry.

The cost of logistics in India stands at 14% of GDP, which is much higher than the logistics cost in most developed nations. This impacts India’s trade competitiveness in the domestic and global market. To address this challenge, the government is planning to take steps that will reduce logistics cost to less than 10% of GDP by 2022.

The reduced percentage will benefit the manufacturers and augment the trade sector, which is increasingly turning towards third-party logistics providers for support, thanks to the rising demands and technological advancements in the manufacturing industry. The warehousing industry is being served by a huge untapped potential in this way.

The potential for warehousing in India is immense, according to market experts, who estimate investments to the tune of Rs. 45,000 crore per annum if it is to meet the industry requirements across all manufacturing verticals. This step calls for huge technological as well as manpower initiatives.

Technology Impact: In terms of technological advancements, warehousing in India currently witnesses automatic identification and data capture or AIDC technology that helps in consignment tracking and seamless cargo distribution. While old methods like barcode readers are still at play, new processes like Quick Response or QR Code are also readily being used to encode data into digital data and thereby accelerate the shipment flow among the beneficiaries.

Other IT solutions include Real Time Location Systems and Radio Frequency Identification or RFID for automated data collection and stock identification that warehouse operators use for ease in operations. These Warehouse Management Systems or WMS and such other IT driven solutions go a long way in upgrading the warehousing industry. Today, WMS includes
integration with automatic material handling equipment, cross-docking, yard management, labour management, billing and invoicing, etc.

Automation is the next step the evolution of warehousing in India. For example, Amazon uses automation to improve customer experience by measuring operational efficiency. In New Delhi where one of the Amazon fulfilment centres is located, the company-warehousing infrastructure operates a 1.2 km long conveyor belt that is equipped with colour-based automatic sorting. These kinds of automation and other robotic enhancements are the future of warehousing in the country and the key toward standardization.

Efficiency is the buzzword in the warehousing sector, however, it is also noteworthy that efficiency and employment are not always the best of friends. The impact of technology in the logistics sector is profound and it has the ability to make certain skills redundant, force the aggregation of certain skills while eliminating certain low-end jobs.

The Way Ahead: The warehousing industry in India is still at the beginning stages and has huge tracks to cover in terms of equalling the global standard. In the scenario of halting technology penetration and advancements, the country has an access to huge manpower and abundant labour but efficient training mechanisms and skill development are not at par with the rate of industry evolution needs. The state of the industry at present is fragmented with absent standardization and dismal investment in IT infrastructure.

The government of India has established a Free Trade Warehousing Zone (FTWZ) to develop the warehousing infrastructure, facilitate the import and export of services with free currency trade transactions. The government aims to increase organized warehousing activity and an economic boost through FTWZ. The Warehousing (Development and Regulation) Act, 2007 introduced The Warehouse Development Authority (WDRA) to make provisions for the development and regulation of warehouses in the country. And in particular, the WDRA is set to develop and protect the agriculture produce sector through adequate warehousing benefits which have little appreciation in the current growth of the warehousing sector in India.

As witnessed so far in the evolution graph of warehousing in India, the sector has huge potential, demand, and future. The investment opportunities in this sector are huge and essential to achieve a world-class infrastructure platform.

Source: N K Realtors September 28, 2018
nkadmin
Drum buffer rope scheduling derived from Theory of Constraints, which is a philosophy set of technique used to manage organization, implemented mostly in manufacturing organization, and is used by management of the organization, to identify critical matters in supply chain, at the bottom of the performance stage. Theory of constraints can also be used by the organization to increase sales volume, reliability and quality in a decreasing inventory, work-in-progress, late deliveries of materials, overheads concurred, overtime established in a supply chain, successful organization will be able to adopt the theory of constraints to make strategic decisions for continuous improvement in supply chain. Drum is considered as the current rate of demand. Buffer is considered as the optimal inventory required replenishing. Rope is the signal to release the full requirement of materials into the system.

The fundamental assumption is that within any manufacturing plant there are liable to be one scarce resources of requirement of materials, which requires control and the overall output of the plant, and the plan of the resource is the drum. The plan in the production is concentrated on the resource i.e. materials, and during the production the management in the plant of production stage, and the management in the plant of production are mainly concentrating and focusing on production, and the main production process is given to protection against disruption of machines or breakdown of machinery in the plant, and with holding buffer stock in the timely requirement, and this behavior which takes in the resources or the materials, requirement in the plant, and this decision through drum mechanism to the rope.

Drum buffer rope in supply chain is concerned with: 1. creating a plan which is real or scheduled so as to make the best use of the capacity, and to maximize profit in the organization by holding efficient inventory operation. 2. Creating the behavior to effectively execute the required plan for the organization. 3. Providing an extensive feedback to identify opportunities to improve performance in the organization.

Benefits of Drum buffer rope is that it is being able to tie the rope so that constraints of resources may not be constrained, and the required quantity will not be stored and capacity will not become wasted.

Drum buffer rope have to be coped with negative policy in the organization: 1. Frequent re-scheduling in material position or requirement that have to updated, which does create any new problem in the organization. Commitment dates promised to customer in supply chain, but comprised in time. Frequent changes in materials, design, scheduling could cause reduced process time in planning in supply chain. A good amount of reporting is necessary before re-scheduling of materials, products in supply chain, and this should take care of the capacity resources constraints. 2. Knowing the commitment of delivery dates, are found to be safe, ensuring proper co-ordination in products, materials is an apt point for concentration in supply chain. 3 Efficient and smooth loading of the product from any heavy load, and thus enabling any constraints, without any subordination of the Theory of constraints becoming applicable in supply chain.

Buffer is the period of time to protect the drum resources, materials, products, from any problem happening, or that occur during the upstream from the drum in operation in supply chain. Its effect is to provide a re-synchronization of the work as it flows through the plant in manufacturing in supply chain. The buffer compensates the process variation in material stock, and makes the drum buffer rope schedules very stable, as per the requirement of the plant in supply chain, and solves the problems, as it has additional affect in eliminating the need of accurate data of requirement for re-scheduling, and this allows production schedule to generate good materials, products, and proper results as per schedule.

Buffer will have variation, but it allows the plant with lower production level to produce work-in-progress, reduction in production lead time, and generate profit that lies in inventory lock up in supply chain.

Drum Buffer Rope: Buffer management: 1. Balanced flow of material, product component, not the capacity: 2. Level of utilization and the bottleneck is not determined by its own potential and other constraints in the system. 3. Utilization and activation of resources which is not synonymous. 4. Schedules should be fixed and established, and by not looking at constraints. Lead time is the result of good result of good schedule, and cannot be predetermined. 5. Time lost in any bottleneck is the time lost in the system in supply chain.

Drum Buffer Rope is a re-working re-scheduling mechanism for the system such that constraints to the drum is never starved by releasing buffer stock, and the right amount of work in the right time i.e considered to be the rope in supply chain, is the method by which the Drum communicates to the system of
manufacturers would go to the supply chain drum, established and continually based upon the market. The Drum is the constraint schedule in supply chain that is managing logistic flow of materials through the system. Drum Buffer Rope and Buffer management are part of the Drum Buffer Rope supply chain.

Defects, at a price the customer is prepared to pay in response to the changes in status in the customer demand. This embodies the concept of improving delivery schedule, with the hindrance in stoppages in assembly line, and with the introduction of production pull system, which is normally characterized by extensive resources shared in the plant in supply chain. In the pull system planning work-in-progress is kept constant and planned program, is either pre-poned or postponed in accordance with the variability or requirement affecting the process of planning, and the start of the execution of the supply chain, therefore it becomes necessary for orders that are to be processed sooner new orders are released, and where there is a disruption, the release slows down, so as to not to flood the shop floor of the plant with work-in-progress, since work-in-progress enables the plant in supply chain, to exploit the constraints fully without the risk of overloading.

**Drum Buffer Rope pull system** is to match the flow of work through production process, in response to customer demand. The pull system is only to release the response to the changes in status in the production, and completion of work, at the point of production process, and therefore pull system in supply chain will have the limitation, and work-in-progress will prevent overall production.

Drum Buffer Road the push system work is released without feed-back of work-in-progress in the system. Push system production is widely adopted in the area of mass production of components, materials, or products that push the material sent for production in time when needed.

Drum Buffer Rope planning has been mapped, and wasteful steps eliminated, thus creating value, active steps to be flow within the order to achieve reduced manufacturing lead time. This involves eliminating and minimizing work, re-works, and back flows, and the different types of stoppages or disruption, that occur in supply chain. If this has been established, the production should only be adhered to specific type of customer, in which the demand of pull is in response to the production for the specific customer, thus meeting the demand, and the threat of non-supply in supply chain. This embodies the concept of improving the production process to produce exactly what the customer needs, and exactly when the need with zero defects, at a price the customer is prepared to pay in Drum Buffer Rope supply chain.

Drum Buffer Rope and Buffer management are managing logistic flow of materials through the system. Drum is the constraint schedule in supply chain that is established and continually based upon the market demand for the end product. Orders made by the manufacturers would go to the supply chain drum, which may or may not be the end product to the manufacturer, and buffer is the time protection positioned in front of the constraint activity that ensures that there is disruption by the fluctuation by various stages in manufacturing of the end product. Depending upon the constraint location the stage in supply chain, the distance in transporting between various stages in supply chain, in which of the size of the buffer, and the amount of time measured by inventory could be relatively large.

The rope serves as the communication link between the critical links of the chain. These points are where material released without constraint, and are assembled or product recognized to be shipped. By meeting that all these activities are synchronized as per working schedule, and appropriate buffer are maintained and supply chain performance is maximized.

**Material Requirement Planning in Drum Buffer Rope** is based on the Push system, is that if work is released to the plant to manufacture, in response, to the schedule, the release should not be influenced by machine breakdown. The design aim of such push system is to minimize inventory carry cost, and seek maximum capacity and labor.

Drum Buffer Rope will sometimes outperform Just-in-time; 1. Fewer inventories required, thus lowering manufacturing cost in supply chain: 2. Better customer requirement and responses: 3. Provides a better product quality: 4. Produces more product with lower standard deviation of flow time, thus helping to determine the product, should be ready for shipment. 5. Lowers work-in-progress inventory and this lowers investment in manufacturing cost.

Inventory system in Drum Buffer Rope is that each stock keeping unit in inventory system is known as an independent demand with specific requirement known as buffer stock. Materials are physically maintained, counted at the point of use. Materials are daily checked for active inventory. Any deficit or shortage of inventory record and physical is considered as consumption, and it is gathered in the inventory control system as consumption.

Drum Buffer Rope does develop high operational cost, underdeveloped material handling, a fragmented warehouse structure, presence multiple regulatory, and policy making entities, lack of seamless movement of goods, products, materials across modes, and poor integration with modern information technology, which remains a bane of the manufacturing in supply chain. The potential of Drum Buffer Rope can be harnessed by boosting human capital, competencies creating an accuracy faster automation, and removing operations bottlenecks in supply chain. Characteristics of Drum buffer rope system is based on production process, and are designed to produce only what is required, business becomes leaner, as a result of not holding excessive stock levels, with a simple list of products, materials and components in supply chain.
Where should you start when looking to embrace automated warehousing, and what are the challenges you might face along the way? Claire Walters offers advice.

A n automated warehouse is a breath-taking sight: picture a circuit board of activity as scores of box-shaped robots soar between pallets, scanning shelves and retrieving stock for delivery to a picking station.

This is just one of a variation of scenes depicting the applications of automated technology across the UK’s warehouses.

Automation itself is not new to warehousing operations or the wider supply chain, but with recent advancements in big data and the Internet of Things, it is reaching new levels of sophistication.

For businesses open to researching or developing robotic warehousing solutions, this means new opportunities to reduce labour costs, increase sorting capacity, and minimise human error.

But where should you start when looking to embrace automated warehousing, and what are the challenges you might face along the way?

Realising the scope of potential in automated warehousing

The most apparent reason for using robotics over any other form of warehouse automation is cost. When properly implemented, it reduces the amount of labour required by warehouse operations, enables higher productivity, and creates the potential to better utilise building space.

Looking more closely, many enterprises identify opportunities as a result of warehouse efficiency analysis.

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Robotic applications can provide greater agility and responsiveness when integrated with smart data and integrated systems.

Take critical cut off times for example: a warehouse might receive an order at 18:00 and need to ship it by 18:30. It is essential that this order can be rapidly processed or it will not ship on time. This can have repercussions as far reaching as the end customer, impacting service levels.

Another trigger, which many enterprises often overlook when considering the applications of robotics, is health and safety.

Warehouses are typically hazardous environments, requiring businesses go to great lengths to ensure operators are kept out of harm’s way.

Automated solutions can augment the human element in certain tasks, removing health and safety risks and limitations completely – image courtesy of Depositphotos.

A great example of this is a stock take. By using a small drone with a camera, you can easily go into the air and inspect a pallet stored 12m high. No more safety harnesses. No more special lifts. No more risk.

How do robotic solutions actually integrate into a warehouse?

Within warehousing, robotics solutions can be split into several areas. You have robotics for storage purposes, which includes all types of cranes or so-called automated storage and retrieval systems (ASRS).

A forklift vehicle would struggle to reach pallets stored 16m from the ground for example, so an automated retrieval system gives a better utilisation of height. And because the robotics system can be incredibly precise,
the retrieval process takes less time per operation.

Outside of this fully automated perimeter, any warehouse vehicle can become an automated guided vehicle (AGV) by installing a robotic module. The benefit is these machines work in existing warehouse installations, meaning they can be introduced relatively quickly and don’t require a complete overhaul of existing processes.

What new challenges does robotic warehousing introduce?

One of the potential downsides is that robotics are much more sensitive to tolerances. By definition, an automated vehicle is set to follow pre-programmed instructions.

Any warehouse vehicle can become an automated guided vehicle (AGV) by installing a robotic module – image courtesy of Depositphotos.

A human can deal very easily with an uneven floor, for example. For an AGV, this could cause a significant problem.

Imagine you’re managing a warehouse and you’re receiving pallets from your suppliers. If the pallet is loading inside a fully automated system or handled by any form of AGV, it needs to be within certain criteria. The wooden pallet itself should be in good condition, there shouldn’t be any nails protruding from it, and its contents should be secured.

Manually, these issues can be managed on a case-by-case basis as people identify, react and adapt to situations. Using robots, they can be critical failure factors. You could find yourself in a situation where you need to carry out a great deal of work to bring the pallets up to the quality standards required by the automated system or to be able to present them to AGVs. Businesses can either manage this process with suppliers, which can be tricky, or put in extra labour to do this rework, which will cancel the benefits in terms of labour savings from the AGVs.

How are businesses already preparing for the future of warehousing?

The potential savings made possible by robotic warehousing are huge, especially at enterprise level, but it is important to realise there are hidden details that should be sorted out before a business even gets to a trial stage.

If you introduce AGVs before you have identified the challenges unique to your supply chain, and then encounter an issue you can’t easily overcome, you will have to postpone the launch while you reinvest into working it out. Preparation through mapping, simulation and process trials is vital.

Self driving AGV (Automatic guided vehicle) with robotic arm moving beside conveyor – image courtesy of Depositphotos.

Many companies are exploring these options because they promise an increase in warehouse efficiency that translates into direct savings. But we’re not just talking about warehouse efficiency measures; robotics also promises a level of supply chain agility that either cannot be achieved today or is very costly.

Think about robotics as essentially free, through-the-night labour. This makes it incredibly appealing, especially to enterprises with escalating distribution costs due to the need to react quickly to customer orders or variance in demand. Integrating robots picking, packing and handling products with an online ordering system, a ‘chatbot’ for customer support and the appropriate level of analytics to manage across a complex supply chain is the dream of many FMCG companies.

But developing these integrated systems requires careful detailed analysis of the entire supply chain and demand cycle. Robots moving pallets are the thin end of the wedge when it comes to the benefits that can be delivered by integrating automation into a truly intelligent, agile supply chain.

Surfacing the potential issues and achievable benefits with supply chain experts who can plan the end-to-end system is the essential step in getting your supply chain ready for robots.

Claire Walters, chief commercial officer, Unipart Logistics

Source: The Manufacturer
WHY IS IT IMPORTANT FOR FINANCE AND PROCUREMENT COLLABORATE?

MS SUDAGONI, LIFE MEMBER & EC MEMBER
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As we all know, Procurement function in any Organisation is a very important function. So also Finance. Both are without doubt important and are critical for success, growth and sustainability in any business. Do they both work in unison or at logger heads? Unfortunately, even today they seem to compete with each other, claiming they are the best!

Procurement department is responsible for supply of all products and services to a company, which are necessary to achieve its business goals. Finance involves the management of financial resources (Cash Flow) and related activities of the organisation, and so on... this is the importance of rest of the other functions too.

Procurement actually is a profit centre of the organisation, and it should not to be viewed as a cost centre. After all, “money saved = direct profit” (as long as we capture it, of course). A General Saying in real life too... Money saved is Money earned!

Three flows that make the Business Tick.
1. Materials Flow (Managed by Procurement)
2. Information Flow (Managed by all functions)
3. Cash Flow. (Managed by Finance)

If Materials and Information Flows are in place, then cash flow is in its place and it is easier for Finance to manage the same. Cash Flow management is the most important aim of the company.

It is essential for Procurement and Finance to adapt and work on an elevated and evolved roles, to maintain a respectable bottom line and contribute to value creation, leadership and strategy formation too.

Yes there may be differences.

Let us talk now about Procurement and Finance interaction and relationship.

What’s the relationship between procurement and finance departments at your organization? Are they’re seamlessly collaborating?!, then, your organization is a big Success and if not...?!?!?!.

Collaboration is the only Way .!

Why should Procurement and Financial Departments work closely and co-operate with each other?

Proper flow of information:
The more the procurement department is aware of the company financial situation and constraints, it will act more effectively and economically.

For instance, in one of my previous organisations, it so happened that we as a procurement department, we were never made to know about the financial status of the organisation. This created a sort of ambiguity, on whether we could make bulk procurement of products for a higher discount rate and propose earlier payments to the suppliers in consideration of an additional cash discounts.

Here, we can understand there is a very huge gap in trusting each other functions and also the understanding on both the departments are equally important for working towards the company’s common goal of sustainability and success, which is missing in many organisations.

After certain time, we (procurement department) were updated on the financial problems, which could upset the suppliers’ payments. At such times, we (procurement department) negotiated extensions of deadlines of upcoming payments, it worked well.

As we all know, the negotiations with suppliers in such situations are much more easier and profitable than going for additional loans from banks, etc.

These two functions (procurement and finance) and the people working in them, are inter-linked closely in many ways, still there has often been a considerable differences and tension is created between the two teams, which is unnecessary.

Here also, a situation where the monthly reports from procurement to be submitted by 5th of every month and whenever, there was a deviation due to the influence of various other parameters, the tension was growing beyond the limits, which was not very healthy, but it still it happens...!!!

The procurement role always, is about helping to spend the organisation’s money well, but that should align perfectly with finance goals around managing the Cash Flow successfully. Yet, there is still a potential conflict building!

Procurement should also focus more on the financial
savings of the procurement transactions, cost reductions (various types – bulk procurement, centralised contract for decentralised supplies, savings of all the purchase transactions, irrespective of their low or high values), etc.

Sometimes, though we (procurement department) understand the financial control clearly, it would be very hard to play the role and make others uncomfortable.

One of the important areas, is around the purchase-to-pay process, which covers the activities supporting the acquisition of goods and services from the perspective of data, administration and payment - so “on-boarding” suppliers, the requisitioning and ordering process, delivery, receipt, invoicing and payment.

Developing co-operation between these departments

Obviously, these are only some examples on how the co-operation of the procurement and financial departments may improve the company functioning. The capabilities of optimizing the company actions in many areas, like:

- budget control and management
- expense analysis
- agreement management and settlement
- cash flow forecasting
- obligation of supplier payment fulfilment

Good organization of a procurement process resulting from the co-operation of the procurement and financial departments, will be possible in practice only if the organisation implements proper IT solutions. This alone will put information flow in place for taking proper decisions!

Nowadays, modern procurement softwares support not only procurement planning and procurement project management, but also communication with suppliers, their qualification and assessment, automatic processing and handling of invoices and agreement management, as well as tender management, etc. This kind of softwares have already been in place from so many years in many of major organisations. Even the small organisations also, to develop/ implement the IT solutions, which is very essential for company’s growth.

As we can see, the good co-operation between the procurement and finance departments depends on the transparency of the transactions, which can happen if we have proper tools in this respect and also, builds the trustworthy interdependency, so also on the will of the company management. Lack of proper such tools or implementation of ineffective solutions, may result in a situation where – instead of gaining the afore-mentioned numerous benefits, the company will have the organisation problems arising from the misunderstanding between the procurement and finance departments.

Procurement and finance: “Are partners”, not Enemies!

Most often these two departments are in logger heads when Suppliers are not paid on committed time or Finance is unable to tell how much and when they can pay. Understandably cash flow problems!

So they should both agree upon a system of Prioritising the committed payments and purchase should get the prerogative to tell which supplier should get the payment within the funds constraint if any.

Finance should tell what funds they promise to allocate for supplier payments on a weekly basis and Purchase should send a list of whom to pay and how much to pay. This must be strictly followed by both, to avoid some suppliers who approach Finance get paid and rest suffer. This will also improve the credibility of the Purchase, in the eyes of the supplier, who commit and get supplier credit as needed.

As such, the procurement department must work closely with finance and accounting to ensure that the company’s money is used wisely. ... Procurement professionals understand the relationship between cost and supplier quality, reliability and performance, and constantly strive for the perfect balance among these factors.

The Importance of Finance and Procurement Collaboration

Collaboration between finance and procurement is essential for the long-term success of a business and to ensure that it’s achieving maximum ROI.

About the relationship between finance and procurement

Procurement is still misunderstood in many businesses. So it has got to educate both Finance and the wider business about what the value it can and should be bringing. And this should be done on an ongoing basis.

- **Procurement also needs to be able to understand and speak Finance’s language** – which is a difficult task but not impossible!
- Finance and Procurement need to be in constant communication. With face-to-face communication and meetings being very important!
- Savings need to be going to the bottom line, and to be measured and reported as such. This should be a key KPI for Procurement.
- Procurement’s targets need to be aligned to Finance’s goals.
- Finance and Procurement should be working together to manage and the reduce risk.
- Cross-functional working is essential – Procurement and Finance work horizontally across functions, and as Finance’s agent of change, Procurement has to be an expert at making change happen.

When these two departments collaborate, they have
better success in organizing and maintaining comprehensive financial and procurement files and ensure all recording is compliant with audit, corporate, and client requirements.

The role of finance in procurement has increased leading to a necessary teaming between these two departments. Co-operation between finance and procurement departments leads to better savings, more informed insights, better demand planning, a better understanding of the supplier landscape, better decision-making, and less timely processes.

A Bridge between Finance and Procurement

There are other parameters also involved in the bridge, which directly influence the extent of spend.

- Consider the Downsides of Certain Cash Flow Strategies:

Organizations have been finding ways to hold onto cash longer recently and one way many finance departments accomplish this insisting on extending supplier payment terms to 90 or more days. This may improve cash flow but it's the procurement department that sees the consequences that the finance department may not.

These terms can lead to supplier relationships becoming strained, suppliers raising their prices to compensate for slower cash receipt, and even having fewer suppliers willing to work with the organization. This is happening in many of the organisations!!

By implementing a better co-operative relationship between finance and procurement departments, these departments need to construct a more balanced cash strategy that will satisfy the needs of both departments.

- Determine a Balanced Inventory Approach

Finance department often only watch the inventory line on a balance sheet to evaluate the performance of the company and they hate to see the high inventory. Finance feels that having items sit idly on the shelf is wasting opportunities to invest cash into activities that will increase ROI (return on investment). At the same time though, the procurement department knows the operational realities of inventory like the need to make sales and continue operations through unexpected events like a sudden increase in demand or an interruption in supply.

Another way to increase the co-operation between finance and procurement departments is to identify the inventory needed to balance operational continuity and working capital strategies. This will allow the procurement department to keep the necessary supplies on hand while satisfying the finance department's need to increase the ROI.

Collaboration between finance and procurement departments is essential for the success of a business and the success of these departments. Without proper collaboration, the organization is not performing as well, as it could.

**Conclusion:** Procurement should understand Finance department is a mirror of factual information! If we Procurement team, go and stand there the mirror will tell you the authentic information on true performance.!

Finance should not be aloof from operations going on. One Finance head I know, every day on arrival at the factory used to go around and visit all shops, see the process and activity and interact with all departments, then go to his seat. He could then talk in equal terms for decision making in Corporate meetings. How many do.!!

The organisations that have the procurement and finance as stand alone departments, will have costly inefficiencies. While procurement can focus on driving more for less from suppliers, finance is concerned about profitability and working capital with less cash in hand. **Collaboration is the only Way.**

Aligning operational processes with business outcomes across sourcing, procurement, and payables creates the potential to deliver savings and generate business value.

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

**References:** Internet; Self Knowledge & Experience and The Senior Associate’s Review.

●●●
Abstract: The use of innovative technology in logistics supply chain has a significant influence on the mobility of goods and people and also on the performance of the logistics firm.

Due to this growth of technology and globalization it has become mandatory for the organisations to adopt with next generation technologies which help in gaining a competitive advantage and increased profitability.

Earlier the Unmanned Aerial vehicles or drones were used only in developed countries and in India drones were most commonly associated with military operations.

With the development and advancement in technology, better integration, cheaper and small sensor and ease-of use options, tools are used for various applications. Use of drones has become a primary resource to acquire remotely-sensed GIS data.

An unprecedented wave of technological innovation submerges today’s logistics supply chain professionals, and they know that they will have to adapt to survive. New breakthrough developments, such as Unmanned Aerial vehicles or drones seem to be everywhere.

Drones and UAVs are among the fastest-growing segments in India, particularly in the commercial arena, where the demand for these is growing exponentially.

India is expected to be one of the fastest growing markets for drones and UAVs because of their ability to transform all key sectors.

According to the global market intelligence and advisory firm, BIS Research, India’s UAV market is expected to reach USD 885.7 million by 2021.

Estimate notes that new and emerging technologies could generate hundreds of thousands of new jobs and hundreds of billions of dollars for the economy over the next ten years.

Key Words: (Innovation, Drone, Economy, Technologies, Supply Chain, Operations)

I. Introduction:
II. What is a Drone/Quadcopter/UA's (Unmanned Aerial Vehicles)?

- Drones belong to a class of aerial vehicles known as UAV's (Unmanned Aerial Vehicles).
- These devices can take to the air without human pilots. This feature makes drones flying robots.
- Encompassing both quadcopters and planes, drones have software-controlled flight plans integrated into their systems. These systems work with GPS to guide and track their movements.
- The quadcopter is a newer Unmanned Aerial Vehicle.
- As its name implies, quadcopters depend on four fast-turning rotors to give it thrust. Two rotors spin clockwise and two rotors spin counter-clockwise.
- To help the process, quadcopters are equipped with two sets of identical, fixed pitch propellers. Flyers achieve control of the quadcopter by changing the speed of its rotor discs using remote control transmitters.

III. Application of Drones in Various Sectors:

Commercial use of UAVs was first recorded in the early 1980s in Japan, where they were used to spray pesticides on rice fields. Since then, drone technology had advanced significantly and provided new applications for all major industries. Drones have effectively disrupted business and operating models in key sectors including Agriculture, Urban Development, Traffic Management, Disaster Management, Forest And Wildlife, Healthcare, Security And Mining. They have empowered organisations and enabled them to capture real-time, highly accurate data, and that too in the most cost-effective manner.

Critical assistance during disaster management and relief operation, monitoring large rugged areas, tracking down criminals, disaster areas, observing forest fires, capturing and collecting all the 2D and 3D features with the use of photogrammetry, image processing and ground control points that are the last mile problem in modelling and visualizing the whole world.

Different types of sensors are used and each of these sensors has different types of applications. Various kind of sensors which are used are visual sensors, multispectral, hyper spectral, Li Dar, GPS and Thermal. Drones are used to acquire remote sensed GIS data. UAVs are used in various GIS operations like:

IV. Types of Drones

- Depending upon the need or applications drones can have variable size and design.
- Here we are going to discuss various types of drones and for ease of understating they are categorized into four basic sections:
  1. Power used
  2. Based On Structure Of Wings
  3. Numbers of propellers used inside
  4. Size
  5. Flying range
  6. Equipment

Digital Aerial Imagery (DAI): With the technological development, drones are used to capture high resolution, georeferenced still photography of the study area. Acquired images can be successfully processed to produce digital ortho-photo and digital map.

Real time Motion Picture (Video): UAV s is primarily used for capturing and downloading real time video. Aerial video, collected by visible video cameras deployed on small drones, helps to solve many hard challenges like natural disaster remediation.

Oblique Images: Oblique images in an aerial photography are captured at specific angle. Oblique images helps to extract 3 components mainly 3D geometry, Appearance, properties/Attributes. UAV s provide cost effective and an alternative with an additional feature to capture building at all possible angles.

Thermal Images: are those images in which visibility of objects in dark by detecting infrared radiation and creating images based on energy fluxes and temperature variations. Thermal camera is a device that can be attached to drones to carry out thermo graphic surveys. They are used to detect the defects in solar panels, wind turbines and buildings and other structures which are difficult to access.

GPS/INS Location: The most widely used navigation Technologies for the UAVs are GPS receivers and INS services. INS is a device which operates independently
of any external signals or inputs, providing a complete setoff navigation patterns (includes position, altitude and velocity) with a high data rate. INS s provides short term position accuracy but satellite based GPS navigation techniques offers a consistent accuracy and GPS signals can be tracked during entire UAV mission

**3D Point Cloud:** UAVs are also used for aerial photogrammetry (Everaerts, 2009). Digital images with automatic generation of high quality, dense point clouds from digital images is the advancement in digital photogrammetric technology (Rosnell & Honkavaara, Point Cloud generation from Aerial Image Data Acquired by QuadrocopterType Micro Unmanned Aerial Vehicle and Digital Still Camera, 2012)

Usage of UAVs is not restricted only for high definition geo referenced images, point cloud model to real time motion pictures, oblique photographs but also has applications for agriculture practices, Disaster management, drones for supplying food and medicines in remote areas and drones for energy.

**V. Application of Drones in Military**
- Drones are used mainly for surveillance purposes. Drone can be used to protect the lives of the military personnel in case of wars.
- The main drone use overseas in war zones is reconnaissance of unknown areas, enemy tracking, and force protection. Nowadays Drones are incorporated with laser guided missiles to carry covert military operations.

**VI. Amazon Prime Air**
- Drone delivery has many advantages that position it as the future of distribution:
  - **Fast delivery:** They can fly in a straight line to their destination.
  - **Delivery to difficult-to-access areas:** Drones are ideal for delivery of medicine and healthcare supplies to remote or undeveloped areas.
  - **Reduced costs:** Automated drones significantly reduce the human labor costs for delivering packages.
  - **Increased competitiveness:** Companies who offer speedy drone deliveries will have a vital edge on their competitors.
  - **Environmental friendliness:** Drone deliveries have minimal environmental impact compared with traditional deliveries by road, rail, or air. This will be valuable for companies who want to enhance their ‘green’ credentials.

**VII. UAVs in Agriculture:** In India agriculture is demographically the broadest economic sector and plays a significant role. Use of technology and the high costs associated with it is a major problem, so farmers are forced to use the conventional way of farming. Using various drones like drones enabled **Crop Health imaging system** which helps to have a composite video at a low cost. Use of this technology in agriculture helps to save time, increases yield as the precision application of pesticides, water and fertilizers only where it is needed for a specific crop increases the yield. It helps in Crop health imaging which is to see the colour contrast in the field that allows how much sunlight is being absorbed by crop canopy.Integrated GIS mapping helps to draw field borders. GIS also produces map based on themes such as soils or hydrology.

**VIII. Drones for Disaster Management:** UAVs are safe and efficient means of acquiring information in a region that are difficult for rescue teams to access and get an idea about the situation such as **flooded area, volcanic sites, tsunami sites. Drones** give status of damages and provide information about its impact. Drones in disaster management helps in food and material supply at the site that are not accessible. After the disaster situation, UAVs are used to search the missing people and rescue the people who are stuck. Monitoring relief and rehabilitation operations and make them enough to serve the persons who are in problem.

**IX. Drones for Supplying medicines and food to inaccessible areas:** Small drones are used to deliver payloads to remote communities to solve the basic problem related to food and medical. Use of drones together with GIS can solve a problem in remote areas like virus affected areas where drones can fulfil the requirements of **medicines and in tribal and naxalite area** where life is too hard to survive, drones can maintain the supply for basic need of life.

**X. Drones for Energy sector:** After natural calamities, drones with high resolution images and ultra violet sensors used to collect information about status of transmission lines, cracked insulators and connections. This information is essential for maintenance of operations and in order to restart power transmissions.

**XI. Companies seeking their Future with Unmanned Aerial Vehicle-Drones**
- **Amazon in UK:** has conducted trials to deliver the goods using drones. They are finding up ways to expand their delivery range by using prime air drones. They have worked out a detailed plan including how the batteries of Drones can be recharged by creating docking stations over the street light poles and telephone towers. Amazon was recently awarded a patent for “multi-use UAV docking stations and methods”.
- **Wal-Mart:** stores Inc. are testing drones to manage its warehouse inventory more efficiently. The drones capture 30 frames per second of products on aisles and alert the „pilot when products become depleted or not properly stocked.
DHL: a German delivery firm is using drones to deliver small parcels to German island of Juist & a sandbar island (12km from German coast). Deliveries will include medication and other goods that may be “urgently needed”. It flies under 50 meters to avoid entering regulated air traffic corridors. The drone takes fully automated route to a dedicated landing area on Juist. To ensure that the good gets secured during transport, DHL parcel developed a special air-transport container that is extremely light weight as well as weather-and waterproof.

Domino: has also conducted a successfully done test to deliver pizza using drones to the customer.

China’s: biggest internet retailer-Alibaba did a 3-day test on drone-based deliveries within a one-hour flight of its distribution centres in Beijing, Shanghai and Guangzhou. Alibaba used its drones to deliver orders for a specific type of ginger tea, helping limit the maximum weight of package to 340g.

XII. In Indian Context

Francesco s pizzeria in south Mumbai (India) conducted a test delivery by sending a pizza to a customer located 1.5 kilometres away from their outlet. The pizza box was carried by a drone and landed on a high-rise rooftop. The pizza was delivered in a shorter duration and the test was successful. Mumbai government is also considering use of drones to monitor, identify and control vehicles breaching traffic rules. Initially they are planning to use drones at load line of the „ghat“ on expressway where setting up of CCTV cameras is not possible. They will employ the use of drones by using it for clicking photos of the vehicles that are breaking traffic rules like mostly heavy loaded trucks jump lanes to overcome other big vehicles, which causes traffic jam and then the transport department will take action against errant drivers.

A private transmission company Sterlite Powers has entered into partnership with drone sharper shape to use its services to monitor its assets in India. Sterlite Powers believe the use of drones will increase the uptime of the grid, reduce transmission tariffs, avoid grid blackouts, and also saves the environment by reducing deforestation along the line corridors. In addition to this, usage of drones will reduce the need of man power hence lowering the variable cost linked to such operations.

For the first time in India in many years in Kashmir Valley Helicopters and drones were used for security purposes during Ed-al-Adha festival on 13 September 16. Drones were used to keep a bird’s eye vigil from the skies and give early warning to security officers.

XIII. India’s Drone Complex: Drones are still very new to India. The country formulated a national drone policy just last year. So, it might still be a good three to five years before Zomato can actually deploy drones effectively.

Use of drones is allowed only during daytime and, according to the guidelines, within the visual line of sight. Barring nano drones—those that weigh under 250 grams and can’t fly at higher than 50 feet—all others must be registered with the directorate general of civil aviation (DGCA). Drones weighing over 2kgs also require an air defence clearance.

XIV. Goods Delivery By Drones Gets Closer To Reality, Updated Policy Unveiled:

The government has proposed allowing delivery of goods by drones, paving the way for commercial applications in the field. In drone policy 2.0, the government has proposed permitting their operations beyond the visual line of sight.

The updated version of drone policy was unveiled by Minister of State for Civil Aviation Jayant Sinha at the Global Aviation Summit. “There are opportunities for our aviation sector and for India’s start-up industry as India is set to become a global leader as far as the drone ecosystem is concerned. It’s important for us to have a policy road map and regulations that support the growth of the drone ecosystem,” Mr. Sinha said.

A person aware of the development said that delivery by drones was permitted after multiple food delivery companies such as Zomato and Swiggy had demanded it.

However, the proposal is a recommendation and a task force led by the civil aviation secretary and the director general of civil aviation finalise the guidelines. “The technical specifications and finer details will be finalised by the task force,” the person said.

Drone policy 2.0: Commercial operations to enable transport of temperature-sensitive commodities like bodily organs, and emergency deliveries of life-saving medicines

1. For flying in controlled airspace, the filing of a flight plan and obtaining air defence clearance will be required.
2. Drone ports will facilitate take-off and landing of drones
3. E-commerce major Amazon has used a drone to deliver a bag of popcorn to an address in rural England in the first commercial outing for a technology that is the US group’s boldest step towards automating deliveries.
4. For the same purpose, the government intends to build ports where drones can land and take off.
**GAINING TRACTION**

**Disclosed funding in drones for commercial purpose across the world**

<table>
<thead>
<tr>
<th>Year</th>
<th>Investment (million $)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2012-13</td>
<td>42</td>
</tr>
<tr>
<td>2013-14</td>
<td>111</td>
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<td>2014-15</td>
<td>164</td>
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<td>479</td>
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<td>2016-17</td>
<td>554</td>
</tr>
<tr>
<td>2017-18</td>
<td>660</td>
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</tbody>
</table>

Source: CB Insights

In August, the ministry released the first version of drone policy, which makes it legal for individuals and companies to operate drones in certain areas other than those barred for security reasons. The ministry, however, held back approval of the commercial use of drones as taxis, delivery vehicles, and other services.

According to the regulations, there are five categories of drones by weight: **Nano, micro, small, medium and large**. For flying in controlled airspace, the filing of a flight plan and obtaining Air Defence Clearance (ADC)/Flight Information Centre (FIC) number will be necessary. The regulation defines “no-drone zones” as areas around airports, near the international border, Vijay Chowk in New Delhi, state secretariat complexes in state capitals, and strategic locations and vital military installations.

A case under the Indian Penal Code can be filed for flying a drone in a prohibited zone.

Drone manufacturers, however, said the government had been conservative in its policy. An executive of a Bengaluru-based drone manufacturer said any drone that would invariably weigh more than 2 kg and fall in the bracket of a medium to large category, needing permission every time it is operated. “This will increase the regulatory hurdle.

**CHALLENGES IN USING UNMANNED AERIAL VEHICLE**

1. **AVIATION APPROVAL**: Any Air-bone delivery system will require approval from Aviation Authorities, Security Checks, flight plans etc.

2. **URBAN DELIVERIES**: Whatever trials have been conducted with drones so far, are in the rural areas. There are different challenges of using them in Urban Area e.g. in Multi storey apartments, where will drones make delivery?

3. **THEFT**: The drones will be able to deliver the goods in open areas. How the packets will be protected from theft, is still a challenge.

4. **INSURANCE COST**: The insurance companies do not have any experience and estimate of risk involved in deliveries through Drones. Therefore, the Insurance Premium will be high initially, which will have an additional cost to the end customers.

5. **WEATHER**: At present Drones cannot operate in Heavy rains, Snow and heavy winds. Therefore it is another challenge to be handled.

**Conclusion**: The study found that the usage of innovative technology in logistics firm in country has contributed to increased performance. **Use of information Technology in transportation, warehousing, security, cargo tracking, verification and tracking information** have benefited the logistics firms in terms of competitive advantage, customer satisfaction, speedy and timely delivery of goods reducing the logistics costs and increase in financial gains. With the advancement in technology, we have UAV’s or drones are developed which are not used only for military purposes but also for domestic purposes like in agriculture, energy sectors, supplying of food and medicines in remote or inaccessible areas, drones in disaster management. UAVs in integration with GIS is used to support life services and for search and rescue operations. In the upcoming years, future drones will have more powerful integrated cameras and drones will get less expensive and rich features. Features like Snapdragon Flight, a digital signal processor for flight control, with Wi-Fi, Bluetooth, GPS and support for different sensors has been introduced. The new developments add features to UAVs, and regardless of regulation, drones carry various sensing instruments for commercial work. UAV’s or drones are more reliable, autonomous, economical and easier to use technology with great potential to perform in more efficient and effective way.

**XVI. References**


[7] Google.co.in
It’s a small world. It’s also an increasingly hot, crowded and contentious one. The combined effect of climate change and society’s impact on the earth is intensifying struggles over natural resources while also threatening our infrastructure, food systems and quality of life. It’s increasingly clear that today’s environmental conditions are not sustainable. Over the past few decades, we have made huge progress fighting disease, poverty and illiteracy. Now we must apply that same ingenuity to the problem of global warming and other consequences of human activity.

Confronting these challenges requires political will, as well as a new approach to business—one that puts human welfare on an equal footing with profits. It also calls for innovative technology. We are already starting to see how the Internet of Things (IoT)—which connects everyday objects to the Internet—can help us transform our world for the better.

Along with advanced data analytics, IoT-enabled devices and sensors are helping us reduce air pollution in some of our world’s biggest cities, improve agriculture and our food supply, and even detect and contain deadly viruses.

2. Cleaner air and water: The Internet of Things can help cities improve public health. Dirty air and water led to a staggering 9 million deaths in 2015 alone, according to a recent study. Cities suffering from chronic pollution, such as Delhi and Beijing, are beginning to deploy sensor networks designed to alert residents when levels are dangerously high.

In London, where up to 9,000 deaths per year are attributed to air pollution, Drayson Technologies has been testing sensors that are distributed to bicycle couriers and a fleet of fuel-cell cars. The sensors, which transmit data to smartphones via Bluetooth, allow Drayson to create real-time maps showing air pollution levels around the city.

In Oakland, California, an environmental sensing startup called Aclima has partnered with Google, EDF and researchers from the University of Texas at Austin to create a highly detailed block-by-block map of air pollution, using a fleet of Google Street View vehicles carrying specialized sensors. By expanding this model across cities, networks of sensors could help policy makers identify and reduce pockets of pollution.
Can smart cities be scaled? A team of tech providers (including Cisco), the UK government and the city of Manchester are trying to answer that question with a project called CityVerve. CityVerve is developing IoT infrastructure for everything from culture, healthcare, energy and travel, making Manchester a more sustainable city while also providing a blueprint for others.

3. Smarter agriculture : From massive agribusiness players like Cargill to small organic farmers, growers all over the world are using the Internet of Things to reduce their consumption of water and fertilizers, cut waste and improve the quality or yield of their products. Examples range from tracking microclimates across cropland, to closely monitoring temperature changes and humidity levels as perishable goods move from field to warehouse to store in order to extend their shelf life and eliminate waste.

California’s recent historic drought forced many growers to search for ways of using less water. Tech providers are helping them with tools such as drone imagery and soil sensors, which measure real-time conditions. According to The Nature Conservancy, such precision agriculture can enable farmers to cut water and fertilizer use by up to 40 percent, without reducing yields.

4. Cutting food waste : Around one third of all food produced for human consumption every year is lost or wasted somewhere along the supply chain, according to the Food and Agriculture Organization of the United Nations. That’s 1.4 billion tons of lost nutrition for a growing planet. The Internet of Things can minimize crop losses and increase productivity.

For example, through a combination of advanced cameras, sensors, weather stations and artificial intelligence, Israeli startup Prospera can help farmers respond quickly to problems while also boosting productivity by as much as a third. ShriniUpadhyaya, a professor at the University of California, Davis, devised a wireless sensor system to continuously monitor leaf health, which helps farmers know exactly where and how much they need to irrigate. And throughout rural Africa, startups such as Farmerline and ArgoCenta are using mobile technology and Big Data platforms to empower smallholder farmers who need access to market data quickly in order to cut waste, improve operations and digitize their supply chains.

5. Connecting patients : The Internet of Things can transform the healthcare industry by helping doctors gain faster access to patients’ data. Wearable, Internet-connected sensor devices that track a patient’s heart rate, pulse, or even blood pressure are increasingly affordable, compact and accurate. While there is still some debate over how to safely collect, transmit and use this data, wearables are one of the most promising IoT applications in healthcare.

Increasingly, technology is also helping doctors and other medical professionals monitor the wellbeing of patients who live independently. Sensors, or even robotic assistants, can alert caretakers if patients forget to take their medicine or do not leave their bedroom by a set time.

As mobile technology proliferates across the developing world, healthcare workers are finding new solutions for profound challenges. In response to the 2015 Ebola outbreak in West Africa, Scripps Translational Science Institute brought together medical device companies to test a patch with integrated sensors to track heart rate, blood oxygen saturation, respiration rate and temperature. The device, which transmits data over Bluetooth, reduces physical interaction with people who may be infected.

6. Fighting breast cancer : Breast cancer is the most common cancer among American women. While screening and treatments have improved survival rates, traditional mammography may not detect a tumor until the disease is advanced. The iTBra, developed by Cyrcadia Health, could help doctors diagnose breast cancer much faster. It consists of two breast patches with embedded sensors that track temperature changes in breast tissue over time. The data is transmitted wirelessly to the user’s mobile phone and shared securely with her healthcare provider. By applying machine learning and predictive analytics to this data, doctors could identify abnormal patterns indicative of early stage breast cancer. Cyrcadia is beginning to test the product in Asia, where breast cancer rates are exceptionally high, but the technology holds promise for women across the globe.

These are just some examples of how the Internet of Things is helping cities, farmers, and healthcare providers improve lives around the world. This new technology is empowering users to make more informed, data-based decisions about our shared resources. Whether those users live in a crowded city or on a remote farm, the Internet of Things can connect them to a better future.

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

Source: World Economic Forum
THE FUTURE OF ARTIFICIAL INTELLIGENCE INDUSTRY IN INDIA

In June, 2018, NITI Aayog came up with a national strategy for Artificial Intelligence in India. The report provided an overview of the government’s plan and roadmap to develop the sector in the country. Through adequate implementation of strategy, Artificial Intelligence is expected to help the country grow economically while contributing to social development to a great extent. The following write-up tries to take the readers through the current status of AI industry in India and how it may turn out to be in future.

Artificial Intelligence Industry in India – The Current Status: A news report published in October in The Economic Times said, “Start-ups witness 108% growth in funding in India in 2018.” The news report further mentioned that Artificial Intelligence was among those domains which witnessed fastest adoption among industry sectors. Currently there are about 400 start-ups working on AI and machine learning domains. About $150 million dollars is invested in India’s AI sector by private players alone and the number has been growing since 2016. Though there has been growth, India lags far behind countries like US and China in terms of investment. With a copious pool of STEM talent and with growing population of youngsters, India will be banking on AI for its economic growth and improvement in quality of life of its citizens.

There are several start-ups that are based in cities such as Bengaluru, New Delhi, Mumbai and Hyderabad which work on artificial intelligence principles to serve consumers better. Their product range vary from multilingual chat bots to online shopping assistance and automated consumer data analysis. The companies have been working in areas such as e-commerce, healthcare, edtech, fintech etc. Though in their nascent stage, the performance of these companies have been promising.

Artificial Intelligence – The Road Ahead: The National Strategy for Artificial Intelligence which was put together by government of India through NITI Aayog, sets the roadmap on how to develop AI in the country. The report points out to how AI will help the country grow, what are the strengths and what are the challenges on the way. The government has identified few areas where it thinks AI will play a crucial role as far as India is concerned. The role of AI few prime areas have been listed below.

Healthcare: India is a vast country and primary healthcare facilities have not sufficiently reached all nooks and corners of it. With lagging infrastructure and less number of doctors per 1000 citizens, it is challenging to the government to promise good quality healthcare to its citizens. Artificial Intelligence is expected to aid India to a great extent in providing better healthcare in future. With effective use of data and algorithms, AI can help in detecting fatal diseases such as cancer ensure preventive treatment instead of reactive care. The government will work towards addressing challenges such as accessibility and affordability with the aid of AI. On the other hand tech giants such as Microsoft are joining hands with both start-ups and reputed healthcare organisations to offer AI based products such as the 3Nethra which can scan and detect eye problems. Such associations can improve the efficiency of healthcare services.

Smart Infrastructure and Smart Mobility: The growing migration of population towards the cities has posed a great challenge to India. The cities’ civic bodies have been struggling to provide quality infrastructure and reduce transportation woes in India’s large metropolis. AI can bring about a major change in cities of the future. With the ripe data base and necessary applications in place the principles of AI can help reduce congestion on roads, aid civic bodies in addressing citizen grievances, timely repair and maintenance of public property, thereby improving the quality of life of city dwellers.

Artificial Intelligence – Action Plan India: Capital and qualified manpower are the two main pillars that are required for the establishment and growth of any sector. India is home to a large talent pool of Science, Technology, Engineering and Math graduates. Companies such as Google, Intel and Microsoft have been offering short term training programs to computer program developers which help them upskill in the area of AI programming. On the other hand AICTE, the government body which governs and regulates professional education in India, recently added AI, IoT, Machine Learning and few other subjects as mandatory subjects in its curriculum of B.Tech programs. Changes in curriculum and content are further expected in the days to come.

Investment towards AI from the private players has been increasing in India ($44 million in 2016 to $77 million in 2017). The start-ups have been working towards developing various AI based products and services. With conglomerates having a lion’s share in India’s market, there is huge scope for AI based enterprise solutions in the country. The increasing demand for products and services can attract more investment towards R&D in AI sector.

iNurture, one of the leading enablers of industry-ready UG and PG education in India, has identified AI as one of the next-gen technologies that can shape the future of the world and can create plenty of job opportunities. iNurture is offering UG programs specializing in Artificial Intelligence domain through various universities in India. The program is designed keeping in mind the needs of current and future industry.

Source: iNURTURE
1. **Background** : The Competition Act, 2002 (the 'Act') has been enacted with the objective of preventing practices having adverse effect on competition, promoting and sustaining competition in markets, protecting the interests of consumers and ensuring freedom of trade carried on by other participants in markets. The Act enjoins the Commission to deal with market failures ex-post that can be caused by enterprises either through unilateral conduct (Abuse of Dominance) or by concerted practice through anti-competitive agreements. In addition, through the mandatory notification regime under the Regulation of Combinations enterprises have to mandatorily seek approval of proposed merger, amalgamation, acquisition or acquisition of control.

If one goes by the age-old adage, ‘King can do no wrong’, then one can misconstrue that the policies/actions by the Government and its undertakings may be beyond the ambit of the market regulator. However, the Competition Act 2002, exempt only those activities of the Government Departments that are in the discharge of sovereign functions. These are inalienable functions of a sovereign Government that cannot be delegated. The activities of Government Departments relating to production, storage, supply, distribution, acquisition or control of goods or person of services of any kind, or in investment, or in the business of acquiring, holding, underwriting or dealing with shares, debentures or other securities of any other body corporate but not relatable to sovereign functions are fully covered under the provisions of the Competition Act. Only the activities carried on by the Central Government dealing with atomic energy, Currency, Defence and Space are per se sovereign functions for the purpose of the Act. The Commission is empowered to look into cases against the Government Departments when they are not discharging sovereign functions in case of contravention of any provision of the Act.

Therefore any entity whether Government department or Public Sector Undertaking which is engaged in activities related to production, storage, supply, distribution, acquisition or control of articles or goods etc., is fully covered under the ambit of the Competition Act. In the next section we undertake an analysis of the relevant clauses that define such wide scope of the term 'enterprise' and their 'activity'.

2. **Definition of “enterprise” under the Competition Act** : “Enterprise” is the object of Competition Act, 2002. The definition of enterprise is, therefore, at the core of the scope of the act, as it determines the dimensions of application of the Act. The Competition Act gives a very wide definition of “enterprise” in the section 2 (h) of the act as below:

“enterprise” means a person or a department of the Government, who or which is, or has been, engaged in any activity, relating to the production, storage, supply, distribution, acquisition or control of articles or goods, or the provision of services, of any kind, or in investment, or in the business of acquiring, holding, underwriting or dealing with shares, debentures or other securities of any other body corporate, either directly or through one or more of its units or divisions or subsidiaries, whether such unit or division or subsidiary is located at the same place where the enterprise is located or at a different place or at different places, but does not include any activity of the Government relatable to the sovereign functions of the Government including all activities carried on by the departments of the Central Government dealing with atomic energy, currency, defence and space.

For the purpose of this clause
(a) “activity” includes profession or occupation;
(b) “article” includes a new article and “service” includes a new service;
(c) “unit” or “division”, in relation to an enterprise, includes-
(i) a plant or factory established for the production, storage, supply, distribution, acquisition or control of any article or goods;
(ii) any branch or office established for the provision of any service.”

From the above definition it is clear that no exemption from the provisions of the Competition Act, 2002 are available to government departments and public sector enterprises. The 1991 amendments to the MRTP Act had brought public sector enterprises under the purview of that Act. However, the Competition Act, 2002 the successor to the MRTP Act has brought under its purview even government departments when they are not engaged in discharge of sovereign functions. Thus it has been found that Railways, Public Works Departments of State Governments etc. are enterprises for the purpose of this Act.

3. **Competitive Neutrality** : “Competitive neutrality means that state-owned and private businesses compete on a level playing field”. The true spirit of the competition act is of competitive neutrality. It does not discriminate between Government and private enterprises. Therefore, to harness the full potential of competition, it is essential that government policies and rules do not prejudice against such level playing field.

Competitive Neutrality promotes effective resource management within the economy and thus helps in achieving higher growth and development. Therefore, the principle of competitive neutrality is gaining wide currency around the world. Competitive neutrality enhances allocative efficiency across all sectors of
the economy. Markets wherein certain economic agents (whether state-owned or private) are put at an undue advantage do not produce goods and services most efficiently. This leads to a sub-optimal use of scarce resources, which, in-turn, results in higher costs and prices.


Yet, it is tempting for the Government to depart from competitive neutrality, since public sector enterprises are viewed as an extended arm of government and are expected to behave differently from private entities. However, preferential treatment to any type of enterprise can have detrimental effects on economic growth and consumer welfare.

4. Public Procurement/ Procurement by government departments and public sector enterprise

Public procurement means procurement by government departments or public sector undertakings for own consumption and not for commercial resale. In the words, the act of ‘obtaining or buying goods and/or services’ is called procurement. When procurement is done by Government or Government undertakings/ statutory authorities it is termed as ‘Public Procurement’. Thus, public procurement is purchase of goods and services by the public sector entities and Government Departments in pursuance of achieving their objectives and fulfilling their mandate. It is being an essential means for meeting functional needs and achieving socioeconomic objectives of the nation. Besides, and more importantly, in the process of such procurement, public money is being spent. Thus there is a need to ensure that the process is efficient and is capable of ensuring value for money.

It is important to bear in mind that public procurement substantially differs from private procurement, as the Government and its agencies have often limited leverage due to the various administrative, procedural and accountability formalities that they have to follow as compared to private sector. A private procurer can choose his purchasing strategy flexibly, whereas public procurement is subject to transparency requirements and a number of regulations. Procurement has to be in a cost effective manner. Thus, efficiency and cost saving are necessary ingredients of the whole procurement process.

Public procurement as share of Gross Domestic Product is substantial in countries across the world; more so in India, being a developing country. An effective public procurement practice aims to meet multiple regulatory, commercial and socio-economic objectives, viz. achieving value for money through transparent and fair procurement process, promoting innovation, ensuring equality of opportunity for all businesses, particularly small and medium enterprises of India, ensuring quality, effective service delivery and diversifying supplier base. While transparency in public procurement can increase society’s capacity to hold governments accountable, it also provides information and data for everyone which could be used by the prospective bidders to monitor each other’s price strategy closely, making it more prone to cartelisation and collusion. Hence, due care has to be taken in public procurement so that the transparency requirement may not encourage such collusion and cartel formation among the group of sellers selling the product or services to the public agencies. Introduction of competitive practices will not only prevent collusion but also help Government to fight corruption by ensuring integrity. International experience suggests that substantial savings can be achieved by infusing greater competition in public procurement and investment in social sector development of the country.

The scale of public procurement makes it an important activity of the economy. However, there are other aspects related with public procurement which make it even more important. Firstly, government spending on procurement creates a cycle of income and investment which contributes to the economic growth of the country. Government expenditure increases the gross income of the market participants producing more demand which in-turn further accelerates the economic activity. The general increase in the income of market participants, in-turn, improves the business and investment environment. The increase in the level of participation also enhances competition in the market in the long run. Thus, there is need for public procurement to be efficient for the reason that an efficient public procurement not only reduces public expenditure but also has positive externalities which affect many aspects of the economy. Here efficiency essentially entails the selection of suppliers with the lowest price (at a given quality). If expenditure is made in an efficient way all the secondary effects or externalities associated with public procurement can be realized. The relation may be depicted in the diagram below:

Figure 1: Effective Public Procurement

![Effective Public Procurement Diagram]

The relation signifies that value for money or the least possible cost is essential for an effective and efficient public procurement. Another observation that can be made from the diagram above is that competition is essential for efficient procurement. Competition among suppliers/manufacturers by providing them a fair chance to participate in public procurement, as in any other market, ensures that most efficient supplier is incentivized. Thus competition is a core element for any efficient and effective public procurement. Therefore, inefficient public procurement can seriously
impair the economic growth of a country.


5. Competition Issues in Public Procurement:

In Public Procurement, transparency and non-discrimination obligations, as well as due procurement processes are necessary. The basic purpose is to deter abuse of discretion by the public authorities/personnel. However, the resulting lack of flexibility limits the public purchaser’s options in which procurement can be done. Therefore, public procurement takes place primarily through bidding, especially if the procurement is large in value terms. If bidding is competitive, it helps in identifying the most efficient supplier of a certain good or service at the most competitive price. The competition concerns which can arise in public procurement can be classified as follows:

**Figure 2: Competition concerns in Public Procurement**

<table>
<thead>
<tr>
<th>Competition concerns in Public Procurement</th>
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<tbody>
<tr>
<td>Non-Collusive</td>
</tr>
<tr>
<td>- Limited number of suppliers</td>
</tr>
<tr>
<td>- Barriers to Entry</td>
</tr>
<tr>
<td>- Limited/Single Tender</td>
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<tr>
<td>- List of registered vendors</td>
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<tr>
<td>- Bureaucratic hassles and complex procedures</td>
</tr>
<tr>
<td>- Information asymmetry</td>
</tr>
<tr>
<td>Collusive</td>
</tr>
<tr>
<td>- Bid Rigging</td>
</tr>
<tr>
<td>- Collusive bidding</td>
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<tr>
<td>- Corruption</td>
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</tbody>
</table>

5.1 Competition Concerns from Non Collusive Aspects

Non-collusive concerns in public procurement arise when the bidding process results in distorting the competition, and as a result, public procurement brings in inefficient outcomes. Such concerns can be:

a) Conditions that limit the number of bidders: The number of suppliers in the procurement process may be limited when procurement rules lay down technical/financial specifications which are more stringent than necessary and render a number of potential suppliers ineligible for bidding.

b) Shortlisting suppliers: Some organizations limit the suppliers using a process of vendor approval and pre-vendor registration. Such registered suppliers become the only suppliers eligible for participation in the bidding process. This type of pre-selection is generally done by procurers where there are safety, expediency and security concerns. However, such processes result in creating a barrier to entry itself, thereby impinging on efficient outcome. Railways and Defense sector in India resort to these kind of vendor pre-approval and registration. Such registered vendor lists create a fertile ground for the suppliers to form supplier’s cartels. Last year in its final report on Railways procurement, the E. Shreedharan committee stated that, “Procurement is through cartel only, list of approved sources and cartels are synonymous... there is no item in which there is no cartel... Committee feels that vendors thus continue to fleece at will”.

c) Information Asymmetry: Many a time there remains information asymmetry in the market for public procurement. Existing and resourceful players often have access to information which other potential bidders in the market lack. Lack of proper publicity, advertising, and calling for limited tenders enquiries (LTE) are issues that come under this category. However, with mandatory e-bidding and common procurement portal for all government procurement such information asymmetry has been largely addressed.

d) Bureaucratic hassles and complex procedures: This can take many forms such as providing insufficient time for filling the bid documents or lengthy procedural requirements. Excessively tedious process for participation discourages the new vendors, thus limiting the number of bidders.

Concerns from Collusive bidding and bid rigging

Collusive behavior here implies understanding or agreement between two or more than two enterprises/persons who are participating in a procurement process.

The biggest threat to competition in public procurement is that of bid-rigging. Competition Act, 2002 defines bid rigging as “any agreement, between enterprises or persons referred to in sub-section (3) engaged in identical or similar production or trading of goods or provision of services, which has the effect of eliminating or reducing competition for bids or adversely affecting or manipulating the process for bidding.”

Clearly for bid rigging to exist, there has to be an agreement between bidders placed horizontally. Suppliers that are engaged in trading or production of identical or similar products or supplying identical services. Collusion among bidders defeats the very purpose of the open tender/bidding process which is to determine the most efficient price offered in a market. Bid rigging occurs when bidders act in concert and intentionally predetermine outcome of the bidding process. Bid rigging may take many forms which are as follows:

- **Collusive bidding:** Agreement between firms to divide the market, set prices or limit production - involves kickbacks and misrepresentation of independence.
- **Bid rotation:** Consipiring firms continue to bid but they agree to take turns being the winning bidder.
- **Cover bidding:** Also called complementary or symbolic bidding- where the bidder agrees to submit a bid which is higher than the designated winner bid or puts certain conditions which are known to be unacceptable to the
Procurement. It is designed to give the appearance of genuine competition.

- **Bid suppression**: Bidders agree to refrain from bidding or withdraw bids in favor of winning bidder.
- **Market territory/customer allocation**: Competitors divide up the market and agree not to compete for certain customers or in certain geographic areas.

### 6. How to address anti-competitive concerns in public procurement

The procurement agencies world over grapple with this question. ‘By adapting fair and transparent procurement’, is a simple answer. This issue requires continuous monitoring and review. Transparent tender process is just one side of the solution. Standardizing the process of writing technical specifications and also preparing template tender specifications with standard commercial clauses including the supply schedules is necessary. In general, there are three main aspects to be looked into viz.: 1) Limit the possibility of bid rigging by adapting transparent tender process; 2) Ensure that a sufficient number of bidders are qualifying and are willing to participate; and 3) Scrutinize the tender allocation keeping a tab on participating firms, their financial quotes to observe the cases of bid-rotation, collusive bidding or territory allocation.

#### The tendering agency should take care of following issues:

- **a)** Avoid too stringent qualifying criteria: The technical and financial criteria to be fulfilled by potential bidders must not be prohibitively complex and stringent. Financial and technical standards in tenders must be in proportion to the criticality of the products to be procured. For example, for procuring simple products like computer hardware and electrical supplies technical and financial standards for suppliers can be kept low to encourage wider participation. However, this tendency could cause high entry barriers for new entrants leading to inefficient outcomes. As far as possible rather than specifying minute details of products, performance expected from products should be specified. One should specify the minimum requirements that do not create obstacles to participation, such as controls on the size, composition, or nature of firms that may submit a bid. It is important to note that the minimum requirements/standards of the firms must depend on the product being procured. Thus, it essential that procurement officials are well versed with the market conditions of the product being procured. Prior information about demand and supply conditions and nature of firms in the market must be collected to set eligibility criteria for bidding firms.

- **b)** Remove entry barriers: Some organizations have established a mechanism whereby only approved vendors by the departmental agency are allowed to participate in tenders. Thus, the set of potential participants in bidding process consists of only a selected few. This in effect works as an entry barrier. As far as possible, the approving agency should be independent certifying body that follows well established procedures. Further the specifications for such products needs to be based on internationally acclaimed standards and should not favour certain technology(ies) or manufacturers. As stated in para a) above, the emphasis should be on the performance standards and not on the material/parts used. For example, if approved list for a product includes just four suppliers then open tender in effect becomes a limited tender (because bidding is restricted to the four approved firms). A limited set of potential competitors also helps in cartel formation.

- **c)** Ensure cost of bidding is reasonable: Tenders must be designed with a view to keep the participation costs of the bid to the minimum. The costs of participation may be monetary in nature or otherwise (labor and time). This can be accomplished in a number of ways:
  - By streamlining tendering procedures across time and products (e.g. use the same application forms, ask for the same type of information, etc.).
  - By combining tenders (i.e. different procurement projects) together to spread the fixed costs of preparing a bid.
  - By allowing adequate time for firms to prepare and submit a bid. For example, consider publishing details of pipeline projects well in advance using trade and professional journals, websites or magazines.
  - Tenders must state the requirements as clearly as possible in the tender offer documents. Specifications should be independently checked before final issue to ensure they can be clearly understood by all the potential participants.
  - Provide scope for vendor consultation and response to vendor queries/clarifications.

- **d)** Provide sufficient time for bidding: Complex tender bids for large projects, especially in infrastructure projects require detailed studies to be undertaken by the bidder. The tenderer must share all the possible information including the detailed project reports prepared by project consultations and future estimates of revenue. In addition, sufficient time is necessary for potential bidders to prepare and submit the bids. It should be ensured that time is not too short so that only the incumbents or big players with prior experience and resources are able to submit the bids.

- **e)** Reasonable bid security/guarantees: Large monetary guarantees which limit participation by small firms should be avoided by those issuing tenders. As a general principle upfront payment of depositing amount must be avoided and monetary guarantees should be used. Monetary guarantees must also be just sufficient enough to ensure that serious bidders participate and not be such that discourage potential bidders.

- **f)** Avoid sub-contracting: Tenders should avoid sub-contracting by the winner of the tender and this should be stated clearly in the tender offer. Sub-contracting is often a tool to share excess profits generated
through bid rigging.

g) Design suitable mechanism promote competitive bidding: Many a time, there is the practice of splitting the quantity among bidders by Public Sector enterprises. Where there are limited number of potential bidders such splitting decreases the incentive for vendors to compete in the bid as they all (or most of them) are assured of orders. In such a situation there is an incentive for them to keep the bids high through collusion. Therefore, as far as possible every contest must be a “winner takes all” contest. (System of placing educational/ developmental orders e.g. 5% of supply orders to non RDSO approved firms in Railway are, however, a useful strategy).

h) OECD CHECKLIST FOR DETECTING BID RIGGING IN PUBLIC PROCUREMENT

Bid -rigging agreements can be very difficult to detect as they are typically negotiated in secret. In industries where collusion is common, however, suppliers and purchasers may be aware of long-standing bid-rigging conspiracies. In most industries, it is necessary to look for clues such as unusual bidding or pricing patterns, or something that the vendor says or does. Be on guard throughout the entire procurement process, as well as during your preliminary market research.

1. Look for warning signs and patterns when businesses are submitting bids.

Certain bidding patterns and practices seem at odds with a competitive market and suggest the possibility of bid rigging. Search for odd patterns in the ways that firms bid and the frequency with which they win or lose tender offers. Subcontracting and undisclosed joint venture practices can also raise suspicions.

- The same supplier is often the lowest bidder.
- There is a geographic allocation of winning tenders. Some firms submit tenders that win in only certain geographic areas.
- Regular suppliers fail to bid on a tender they would normally be expected to bid

Avoid negotiations: Practice of conducting Negotiations with bidders after receiving the bids also affects competition in the market. Though the CVC guidelines allow negotiations in rare and exceptional situations and that too only from lowest technically suitable tenderer, in Railways tender negotiations are held in almost all high value items. Negotiations discourage quoting of competitive rates. In fact, firms tend to quote inflated rates which result in negotiation to reduce rates and the same process continues in subsequent tenders. The final rates in in such cases would normally be higher than would be thrown up in a competition process. In such cases market rate is never received and the last accepted rate is taken as basis for settlement of future tenders.

for, but have continued to bid for other tenders.

- Some suppliers unexpectedly withdraw from bidding.
- Certain companies always submit bids but never win.

- Each company seems to take a turn being the winning bidder.
- Two or more businesses submit a joint bid even though at least one of them could have bid on its own.
- The winning bidder repeatedly subcontracts work to unsuccessful bidders.
- The winning bidder does not accept the contract and is later found to be a subcontractor.
- Competitors regularly socialise or hold meetings shortly before the tender deadline.

2. Look for warning signs in all documents submitted

Tell-tale signs of a bid-rigging conspiracy can be found in the various documents that companies submit. Although companies that are part of the bid-rigging agreement will try to keep it secret, carelessness, or boastfulness or guilt on the part of the conspirators, may result in clues that ultimately lead to its discovery. Carefully compare all documents for evidence that suggests that the bids were prepared by the same person or were prepared jointly.

- Identical mistakes in the bid documents or letters submitted by different companies, such as spelling errors.
- Bids from different companies contain similar handwriting or typeface or use identical forms or stationery.
- Bid documents from one company make express reference to competitors’ bids or use another bidder’s letterhead or fax number.
- Bids from different companies contain identical miscalculations.
- Bids from different companies contain a significant number of identical estimates of the cost of certain items.
- The packaging from different companies has similar postmarks or post metering machine marks.
- Bid documents from different companies indicate numerous last minute adjustments, such as the use of erasures or other physical alterations.
- Bid documents submitted by different companies contain less detail than would be necessary or expected, or give other indications of not being genuine.
- Competitors submit identical tenders or the prices submitted by bidders increase in regular increments.

3. Look for warning signs and patterns related to pricing

Bid prices can be used to help uncover collusion. Look for patterns that suggest that companies may be coordinating their efforts such as price increases that cannot be explained by cost increases. When losing bids are much higher than the winner’s bid, conspirators may be using a cover bidding scheme. A common practice in cover pricing schemes is for the provider of the cover price to add 10% or more to the lowest bid. Bid prices that are higher than the engineering cost estimates or higher than prior bids for similar tenders may also indicate collusion. The following may be suspicious:

- Sudden and identical increases in price or price ranges
by bidders that cannot be explained by cost increases.
- Anticipated discounts or rebates disappear unexpectedly.
- Identical pricing can raise concerns especially when one of the following is true:
  - Suppliers’ prices were the same for a long period of time,
  - Suppliers’ prices were previously different from one another,
  - Suppliers increased price and it is not justified by increased costs, or
  - Suppliers eliminated discounts, especially in a market where discounts were historically given.
- A large difference between the price of a winning bid and other bids.
- A certain supplier’s bid is much higher for a particular contract than that supplier’s bid for another similar contract.
- There are significant reductions from past price levels after a bid from a new or infrequent supplier, e.g. the new supplier may have disrupted an existing bidding cartel.
- Local suppliers are bidding higher prices for local delivery than for delivery to destinations farther away.
- Similar transportation costs are specified by local and non-local companies.
- Only one bidder contacts wholesalers for pricing information prior to a bid submission.
- Unexpected features of public bids in an auction, electronic or otherwise such as offers including unusual numbers where one would expect a rounded number of hundreds or thousands — may indicate that bidders are using the bids themselves as a vehicle to collude by communicating information or signalling preferences.

4. Look for suspicious statements at all times.

When working with vendors watch carefully for suspicious statements that suggest that companies may have reached an agreement or co-ordinated their prices or selling practices.
- Spoken or written references to an agreement among bidders.
- Statements that bidders justify their prices by looking at “industry suggested prices”, “standard market prices” or “industry price schedules”.
- Statements indicating that certain firms do not sell in a particular area or to particular customers.
- Statements indicating that an area or customer “belongs to” another supplier.
- Statements indicating advance non-public knowledge of competitors’ pricing or bid details or foreknowledge of a firm’s success or failure in a competition for which the results have yet to be published.
- Statements indicating that a supplier submitted a courtesy, complimentary, token, and symbolic or cover bid.
- Use of the same terminology by various suppliers when explaining price increases.
- Questions or concerns expressed about Certificates of Independent Bid Determination, or indications that, although signed (or even submitted unsigned), they are not taken seriously.
- Cover letters from bidders refusing to observe certain tender conditions or referring to discussions, perhaps within a trade association.

5. Look for suspicious behaviour at all times

Look for references to meetings or events at which suppliers may have an opportunity to discuss prices, or behaviour that suggests a company is taking certain actions that only benefit other firms. Forms of suspicious behaviour could include the following:
- Suppliers meet privately before submitting bids, sometimes in the vicinity of the location where bids are to be submitted.
- Suppliers regularly socialise together or appear to hold regular meetings.
- A company requests a bid package for itself and a competitor.
- A company submits both its own and a competitor’s bid and bidding documents.
- A bid is submitted by a company that is incapable of successfully completing the contract.
- A company brings multiple bids to a bid opening and chooses which bid to submit after determining (or trying to determine) who else is bidding.
- Several bidders make similar enquiries to the procurement agency or submit similar requests or materials.

6. A caution about indicators of bid rigging

The indicators of possible bid rigging described above identify numerous suspicious bid and pricing patterns as well as suspicious statements and behaviours. They should not however be taken as proof that firms are engaging in bid rigging. For example, a firm may have not bid on a particular tender offer because it was too busy to handle the work. High bids may simply reflect a different assessment of the cost of a project. Nevertheless, when suspicious patterns in bids and pricing are detected or when procurement agents hear odd statements or observe peculiar behaviour, further investigation of bid rigging is required. A regular pattern of suspicious behaviour over a period of time is often a better indicator of possible bid rigging than evidence from a single bid. Carefully record all information so that a pattern of behaviour can be established over time.

7. Some Bid Rigging Cases in India

1. A Foundation for Common Cause & People Awareness v. PES Installations Pvt. Ltd. &Ors., Case No. 43 of 2010

The Commission examined inter alia allegations of bid rigging by the bidders in the tender floated by
the average turnover of the company. However, COMPAT vide its order dated 25.02.2013 passed in Appeal No. 93 of 2012 after considering the aggravating and mitigating factors reduced the penalty to 3% of the average turnover.

2. Aluminium Phosphide Tablets Manufacturers, Suo Moto Case No. 02 of 2011

The Commission examined the allegation of anti-competitive acts and conduct in the tender for procurement of Aluminium Phosphide Tablets required for preservation of central pool food grains by Food Corporation of India. In this case, the Commission inter alia noted that the identical bid price is not possible unless there is some sort of prior understanding. The Commission found the collective action of identical bids and simultaneous entry into the premises of FCI before submission of bids as indicative of ‘plus’ factors is support of existence of an understanding among the parties. The Commission apart from issuing a ‘cease and desist’ order, imposed a penalty upon each of the contravening party @ 9% of the average turnover of the company.

In LPG cylinder manufacturers, Suo Moto Case, the Commission initiated suo moto proceedings against LPG cylinder manufacturers who were found to be involved in bid rigging in supplying LPG cylinders to M/s Indian Oil Corporation Limited pursuant to a tender floated by it. It was noted by the Commission that the identical price quotations submitted by the opposite parties therein pursuant to the impugned tender were actuated by mutual understanding/arrangements. The Commission apart from issuing a cease and desist order imposed a penalty upon each of the contravening party @ 7% of the average turnover of the company.

Conclusion: There is a serious need for designing and implementing public procurement and managing all its processes in such a manner that while it is transparent and fair, and conforms to the competition law, the procurer must get value for money. On one hand, the step wise approach of procurement process makes it akin to ‘science’ whereas becoming unpredictable in an open and participative environment is an ‘art’ of the procurement agencies. The approach of the Commission in relation to procurement is two-fold. First is to be an advocate of competition in public procurement and, second is to penalise the violators of law by civil sanctions as per the Act. Fair, transparent and competitive bidding process will certainly help the procurers to get the best value for money.

Suggested Further Readings
11. Public Procurement Guidelines- Competitive Process. Available at: www.etenders.gov.in

Other Resource Persons’ Material
Part 1: Basic Introduction
Part 2: Consumer Associations
Part 3: Trade/Industry Associations
Part 5: Regulatory Bodies
Part 6: Competition Compliance Programme

Footnotes:
2. Anil Kumar Bhardwaj, Adviser Economics and Ms. Maria Khan, Research Associate
3. Section 4 of the Act
4. Section 3 of the Act
5. Section 5 & Section 6 of the Act
10. OECD; Guidelines to fighting bid rigging.
Source : CCI
Supply Chain Management has taken the center stage of business today globally. Every organization is looking for SCM professionals to play their role effectively to add value to their organization. SCM has been reckoned as a powerful tool to leverage the competitive edge to their organizations. SCM professional are expected to focus, understand, evaluate and improve the performance of extended supply chain with collaboration of other supply chain partners. Logistics which was a peripheral activity of SCM has grown independently and professional warehousing and transportation services are entering into the market.

In India, very few institutions and Business Schools are producing SCM professional and the number is stated to be poor. What we talk is fully trained SCM Managers who can take up any sector of business. They must be qualified with deep SCM concepts and gel with any sector of business.

One survey reveals that the Managers that are generally qualified in General Management do not opt SCM as career option. As a result, organizations employ Managers who are either average in other departments or not required elsewhere are put into SCM department forcefully. Thus there is a gap exists between supply and demand of supply chain and logistics professionals in these areas.

Even though the logistics sector is growing whether sea/containers, by road, by aviation, by railways, or even by multimodal transport, the number of executives and the technical knowledge in the sector is quite low.

In the area of logistics, there is a great need for education. But there are not enough Institutions/Colleges that offer training in logistics. In some Engineering courses SCM and Logistics is a part of the curriculum.

This is not the case in many other countries. There are focused courses in SCM with internship with leading Industries and proven candidates are employed with premium packages. This fact was presented in one of the World Congress of IFPSM.

In India, SCM curriculum must be updated continuously more so, in the context of new technologies like IOT, AI, ME, Robotics, are being integrated into SCM.

In the recent NATCOM 2018 at Aurangabad, one of the speaker said that the Govt. is only carrying out SCM job and everyone in the society is an SCM guy. We have to accept the same.

As a faculty of SCM, I find SCM unlike in other countries is still to be developed and matured in India. The practice is still not involving the concepts being taught. The courses offered should be loaded with relevant case studies so that the students get exposure in solving different supply chain and logistics issues. Students should be asked to select one Industry and study its supply chain in detail right from sourcing from upstream supplier to downstream customer servicing. Games can be included to enhance the learning.

Analytical skills are very much part of SCM curriculum. Basic skills in the area of statistics, problem solving skills, decision making skills etc., are to be imparted through live case studies. The case studies must be from different sectors. Supply chain problems in textile/garment industry will be different from health care industries. Management games such as beer games etc., will make them improve their decision making skills. Management Information Systems and reporting skills are also very important although it looks very simple.

One of the most important issue in SCM is responsible and ethical behavior and attitude. Responsible procurement include ethical and moral, green purchases and importance of environment should be inculcated through activities such as visiting bio-reserves etc. Industry visits of different sectors like Textile/Garment, Hospitals/healthcare, Hospitality/Hotels, Auto/Manufacturing Industries, Software/BPO/Service Industries will be highly beneficial to Supply Chain Professionals.
COMPETITIVE ADVANTAGE THROUGH SUPPLIER VALUE MAPPING

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Competitive advantage is the leverage that a business has over its competitors. It is the ability to stay ahead of present or potential competition. This can be gained by offering clients better and greater value. A competitive advantage may include access to natural resources, such as high-grade ores or a low-cost power source, highly skilled labor, geographic location, high entry barriers, and access to new technology. Target markets recognize these unique products or services. This is the reason behind brand loyalty, or why customers prefer one particular product or service over another.

Value proposition is important when understanding competitive advantage. If the value proposition is effective, that is, that the value proposition offers clients better and greater value, it can produce a competitive advantage in either the product or service. The value proposition can increase customer expectations and choices. Therefore, while discussing Competitive Advantage, Value Mapping is Conjointly done to understand waste in the system and enhance the value thereby achieve value proposition.

Here in this article let us discuss on Supplier Value Mapping and how it enhances the Competitive Advantage for the organization.

Supplier Value Mapping: Supplier Value Mapping allows corporations to analyze processes from origin Sourcing; Supplier Compliance; Value Performance and Standardization. This technique used to document, analyze, design, manage and improve the flow of information or materials required to produce a product or service for a customer. Since supplier is an important link in value chain contributing to value enhancement of any organization, Supplier Value Mapping is done for competitive advantage.

Value Stream Mapping (VSM) is a Toyota lean manufacturing visualization tool for recording all the processes that are required to bring a product to market. An important goal of value stream mapping is to identify processes that do not provide value so they can be improved. It is a method for analyzing the current state and designing a future state for the series of events that take a product or service from its beginning through to the customer with reduced lean wastes as compared to current map.

Ways of Competitive Advantage: Companies develop a competitive advantage when they produce attributes that allow them to outperform their competitors. Here are Eight Ways companies and individuals can create an edge.

Suppliers are often a procurement organization's backend competitive weapon, their hidden resource, their competitive edge. These competitive gains can manifest themselves in a wide range of areas, from better prices and delivery times to increased opportunities to consider and implement innovative practices, value creation, support in revenue growth, and cost competitiveness. Supplier are catalysts in maximizing company's product / brand competitiveness in many means, going beyond the narrow focus of cost reduction. Some of these Value Drivers for Competitiveness are discussed here.

Supply Value Drivers: Supply Capabilities are guided by the decisions made regarding the key supply drivers. Each of these drivers can be developed and managed to emphasize responsiveness or efficiency depending on changing business requirements. Several techniques are used by companies to evaluate suppliers and measure performance. The first step in implementing any of the techniques being discussed...
is to determine the attributes that should be considered. A firm should focus on the attributes that it finds most important. These matrices should be Measurable, Actionable, Trackable over time, Maintained and updated regularly, Tied to business goals. Some attributes are easy to measure while others are not, however some relationship may be established with subjective judgement. Measuring suppliers is a process of combining different measurements of “quality” into one single measurement of overall performance by assigning “weighted” values to each key element (or KPI) performed by the supplier and calculating a weighted score that can be used to track the supplier’s performance.

Some of the attributes are opportunities to improve the supply chain, to reduce stock on hand, speed up deliveries, respond more effectively to queries; opportunities to enhance tangible goods by providing a rich supply of intangible, knowledge-based supplements that might have strong customer appeal; and opportunities to create a uniqueness in the supply arrangement, to differentiate the products and services, through some distinctive combination, that allows your company to enjoy a competitive advantage in the markets you serve. Some of the metrics that can be considered and opportunities to enhance the range of products and services being offered by the Supplier are:

- **Core Offerings**:
  - **Product Quality**: Opportunities to improve performance - quality level, service level, correct quantity; Reliability, Consistency. Some types of Quality Metrics are used to measure performance. **Quality metrics** are a key component of an effective quality management plan and are the measurements used in ensuring customers receive acceptable products or deliverables. **Quality metrics** are used to directly translate customer needs into acceptable performance measures in both products and processes.
  - **Delivery Performance**: Delivery performance can be defined as the level up to which products and services supplied by an organization meet the customer expectation. It provides an indication of the potentiality of the supply chain in providing products and services to the customer. Examples: Delivery On Time, In Full (OTIF), Flexibility, Accuracy.
  - **Direct Product Cost**: A direct cost is a price that can be completely attributed to the production of specific goods or services. Opportunities to improve the cost per unit of goods provided, to improve the terms of trading, to improve cash flow, etc., which may result in a reduction in Purchasing Price & Continuous Efforts to Reduce Cost.
  - **Sourcing Process**: A sourcing process is used to select the best product or service for a certain category of expenditure. Lots of these processes are resulting in large saving opportunities, delivery of quality products, or favorable terms, generating value to the business, by securing that all goods and services are sourced professionally. Finding good suppliers and maintaining solid relations with them can be an invaluable tool in the quest for business success and expansion and in turn developing sustainable competitive advantage. In fact, a business can only be as good as are the suppliers with whom it works. Building strong and long-term partnerships with key suppliers ensures continuous improvement and increases the mutual dialogue, in alignment with the organizational strategy by building an effective Sourcing Network. Some of the Supporting Aspects of suppliers are:
    - **Sourcing Support** in terms of Technical support, Product Specifications, Service Quality, Responsiveness, Accuracy of Information, etc.
    - **Personal Information**: Cordial Working Relations with the suppliers, Problem Solving, Openness proves to be intangible support for competitiveness.
    - **Supply Acquisition Costs** include all costs associated with supplier sourcing, contract tendering, negotiations, and finalization, preparing and tracking the purchase orders from various suppliers, etc. Standardization of these processes enhances value proposition. Some of the Key Factors are: Inventory Costs, Order Handling Costs, Product Inspection Costs. Evaluation of Inventory consideration is dependent somewhat on the supplier’s business - inventory accessibility, avoid stock-outs are factors to look into.
    - **Logistics/Location Support**: Supplier capabilities
in this area include transportation capacity, sourcing capabilities, and ‘just-in-time’ performance.

- Reductions in total product cost, either through streamlining of work processes (inventory management, new product design, scheduling, etc.) or replacement of costly components with less expensive—but still effective—ones prove to reduce cost substantially.

**Supplier Competitiveness**: Suppliers can be an important source of information on ways in which both small and large businesses can improve performance and productivity.

**Supplier Involvement**: Supplier involvement can help buyers compete in the marketplace in many ways – Improvement of products through contributions to product design, technology, or ideas for producing new products. In most such instances, suppliers help buyers by pointing out ways in which designs can be improved or more desirable materials can be used. Early Involvement in NPD (New Product Design) proves to be very beneficial for the company. Suppliers are often sources of suggestions that allow buyers to hold consistent tolerances in production.

Suppliers are also good source of Supply Market Knowhow, Finished Goods Market Information, Competitors Strategic Approaches etc. Suppliers with extensive knowledge of market conditions and mastery of contemporary issues impacting your business can be immensely valuable in helping companies chart a course to sustained competitive success. Suppliers Experience is one more asset for developing Company’s Competitive Advantage.

Ability to Provide Technical Assistance—Suppliers with top research and development capacities can be quite valuable to buyers, providing them with significant savings in both price and quality. **Buyer-seller alliances unleash a capacity for innovation that far outweighs the short-term cost savings offered by arm’s-length competitive bidding.**

**Time to Market**: Improvements in “speed to market” – Businesses’ strategies are predicated on schedules, which in turn are based on Accelerating Design Work, Fast Proto Typing, Fast Testing & Validating, receiving shipments at agreed-upon times etc are most significant contributions to competitive gains to the company.

**Operations Costs**: Purchasers need to know a great deal more about suppliers’ capabilities, otherwise that prove to be costly with non-delivery or wrong delivery. The supplier’s capacity for production should be considered, including its ability to integrate design and manufacturing functions, its approach to design changes, and its measurement features. Proper assessing and managing these also lead to Product Cost Reductions, Manufacturing Costs, Tooling & Warranty Costs. These ultimately translate into improvements in customer satisfaction and competitive advantage.

Since there are innumerable benefits resulting into competitive advantage, Supplier Value Mapping exercise need to be undertaken which provide meaningful inputs into a structured process of methodical assessment of value propositions and innovations for improvements and mutual benefits.

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*Source: ETIG Database dated 22nd February 2019*
Speaking at an international conference on “interconnectivity in Central Asia” held in Tashkent, Uzbekistan, on 19 February, Deputy Director-General Alan Wolff said an open trade policy agenda and active participation in the work of the WTO can promote greater connectivity within Central Asia and with the rest of the world. He stressed that the WTO’s Trade Facilitation Agreement and discussions on e-commerce can play an important role in addressing the region’s connectivity challenges. This is what he said:

Excellencies, Ladies and Gentlemen,

I thank the Government of Uzbekistan and the United Nations Regional Centre for Preventive Diplomacy for Central Asia for inviting the WTO to present views at this Conference. For one thing, the invitation gave me the chance to visit Samarkand, which at one time was at the heart of the Silk Road, perhaps the most famous trade routes in all of human history. It was a marvel of the world. There has not been a time of extraordinary economic opportunities for Central Asia since the use of the Silk Road was at its peak, over 600 years ago.

Far-reaching economic reforms are taking place in a number of countries following the dissolution of the Soviet Union. A number of countries in the region have consolidated the gains of domestic economic reform and are building on them by their integration into the world economy. To achieve this, they have joined or are taking steps to join the multilateral trading system, created and maintained by the World Trade Organization, the WTO.

Trade is key factor in economic and social development, providing enhanced prospects for prosperity. The trading system, founded in 1947 with the General Agreement on Tariffs and Trade, was an integral part of the recovery, reconstruction and development effort to deal with the ruins of the Second World War. Today, its successor, the WTO, addressing a rapidly changing world economy, is playing a central role as the chosen forum for cooperation among countries accounting for over 98% of world trade as the only global institution setting and overseeing trade rules.

The WTO, successor to the GATT, was established in 1995, only a few years after Central Asian countries gained their independence. Shortly thereafter, a number of these countries initiated the process of joining the WTO — Uzbekistan in 1994, Kazakhstan and the Kyrgyz Republic in 1996, and Tajikistan in 2001. The Kyrgyz Republic was the first of these countries to become WTO member in October 1998. Tajikistan became WTO Member in 2013 and Kazakhstan in 2015. Uzbekistan has recently resumed its accession process with a strong commitment to re-engage and work toward a positive conclusion as soon as possible.

WTO accessions continue to be a high priority for the Organization. Since 1995, WTO accessions have expanded the Organization’s membership to 164 with a profound effect, providing a platform for accelerated economic growth for many economies and regions across the globe.

The accession process provides countries a unique opportunity to drive and implement fundamental domestic reforms based on the values and principles of the multilateral trading system. The dividends of the WTO accession process can be seen in Kazakhstan, which joined the WTO in 2015. Its negotiations for accession, accompanied by an extensive domestic economic reform program, resulted in the country’s transformation from a Soviet planned economy to a modern, knowledge-based economy. Any can visit Kazakhstan for themselves, as I have, and see the transformation in progress.

From a country with GDP per capita at USD 1,350 in 1996, Kazakhstan reached a level of per capita GDP at USD 8,900 in 2017, nearly a 600% gain. It has been estimated that Kazakhstan’s WTO accession has resulted in welfare gains equal to 3.7% of its GDP. Much is due to the liberalization of foreign investment in the services sectors following from Kazakhstan’s WTO accession and improved access to the markets of non-CIS countries. Over the past ten years, the business environment has improved dramatically. According to the ease of doing business index of the World Bank, in 2010 Kazakhstan ranked in 63rd place, while in 2019, Kazakhstan is in the 28th place, among the world’s top 30 economies in ease of doing business. This is an impressive jump and the WTO accession process, combined with national reforms were instrumental in achieving these results.

Although a relatively new member, Kazakhstan has exercised leadership for Central Asia and the WTO by hosting the next WTO Ministerial Conference in Astana in June next year, bringing 164 WTO Member Trade Ministers from around the world to Central Asia for the first time in the history of the multilateral trading system.
The WTO accession process requires countries to undertake commitments extended to other Member countries, while receiving trade benefits from all other WTO member countries in return.

Uzbekistan has recently made the WTO accession one of the priorities in the Uzbekistan’s Development Strategy for 2017-2021. For Uzbekistan the WTO accession can bring tangible results for the key sectors of the economy. One example is agriculture, which accounts for approximately 17.6% of GDP and employs about 26% of the country’s labour force. Understanding and playing a part in dealing with evolving standards for food products is essential for agricultural trade to expand. Moreover, Uzbekistan is the 5th largest exporter of cotton in the world. The Government’s plan is to develop the textile sector and process more of its own raw cotton at home. This goal can be supported by the WTO’s extensive efforts with respect to cotton development assistance. The Director-General’s Consultative Framework Mechanism on Cotton, which I chair on his behalf, provides the forum within the WTO in which donors and recipients work together on development cooperation regarding cotton. Uzbekistan, as a WTO Observer, can already begin to take part in this forum and benefit from the knowledge of improvements being contemplated for cotton development assistance.

Despite the region’s long historical association with the flows of goods, people and culture, Central Asia faces several challenges: low population density, long distances and limited connectivity. One way to address these issues is to implement an open trade policy agenda, which can increase the attraction for foreign investment. Another is to participate actively in the work of the WTO which can promote greater connectivity within the region and with the rest of the world. Let me highlight two WTO agenda items which are of high relevance to Central Asia: Trade Facilitation and E-Commerce.

High costs linked to trade across borders can be lowered through the implementation of the Trade Facilitation Agreement (TFA). This is a landmark Agreement which is meant to cut red tape by reducing regulatory burdens when conducting international trade and improving cooperation between customs authorities and other authorities. Kazakhstan, Tajikistan and Kyrgyz Republic are already in the process of implementing the TFA, while Uzbekistan, I hope will ratify its participation in the TFA upon its WTO accession. For the landlocked countries in Central Asia, the WTO’s TFA offers a multilateral framework to address the region’s connectivity challenges that are integral to its agenda for economic diversification and modernization.

Developing countries have the most to gain from the implementation of the TFA. It has been estimated that developing countries’ exports are expected to increase by between US$ 170 billion and US$ 730 billion per annually. Further, it has also been estimated that over the 2015-30 period, full and accelerated implementation of the TFA could help developing countries’ economic growth by 0.9% annually and boost their exports by an additional 3.5% annually.

It is imperative that the roles of the multilateral trading system meet the needs of its Members as the trading system itself evolves. Today, with the disappearance of old ideological battle lines and the establishment of new forms of trade, an integral and rapidly increasing component of global trade is e-commerce. E-commerce is essential to interconnectivity and is rapidly transforming the way economies and societies function, and how goods and services are produced and traded. A WTO report estimated that in 2016 the value of e-commerce transactions totalled US$ 27.7 trillion, of which US$ 23.9 trillion was business-to-business e-commerce transactions.

In a fully digitalized world, in order to make full use of the opportunities provided by e-commerce but also address the challenges linked to it, the WTO’s role is critical. The world of e-commerce needs to have a regulatory framework for e-commerce based on openness, transparency, non-discrimination and predictability. WTO Members are working to provide the platform to create a comprehensive e-commerce set of rules. At the end of January this year, during the World Economic Forum Annual Meeting in Davos, a group of WTO members – 76 of the 164 Members representing approximately over 85% of the global trade, stated their intention to launch negotiations on electronic commerce and Kazakhstan is among them.

WTO Members from Central Asia are part of the exciting dynamics which are aimed at modernizing the WTO into the 21st Century, including E-Commerce. Kazakhstan is not only part of the Joint Initiative on E-Commerce, but also on Micro-, Small- and Medium-Enterprises (MSMEs) and Investment Facilitation for Development. Kyrgyz Republic and Tajikistan are also part of the Joint Initiative on Investment Facilitation (along with 42 other Members), while Kyrgyz Republic is also part of the Initiative on MSMEs (with 55 other Members).

These Initiatives are plurilateral discussions open to all WTO Members and open as well to countries that are WTO Observers, like Uzbekistan.

Today’s discussion is an excellent opportunity to help the policy making process reflect on what has been achieved so far with respect to regional cooperation in Central Asia and to help establish the way forward.

There is still a lot of work to be done but I have no doubt that tangible results for the region can and will be achieved.

Thank you.

Source: WTO Website
Logistics is the management of the flow of goods and services between the point of origin and the point of use in order to meet the requirements of customers or corporations. Logistics involves the integration of information, transportation, inventory, warehousing, material handling, and packaging, and even security. Logistics is a channel of the supply chain which adds the value of time and place utility. Today the complexity of production logistics can be modeled, analyzed, visualized and optimized by plant simulation software, but is constantly changing. In Textile Industry where so many stages are need to pass from Raw materials to finished goods and then to reach at customers end within stipulated time frame, the logistics management plays a vital role in satisfying customers need and brings delighters in business circle.

The word logistics has its origin in the French verb loger to lodge or to quarter. Its original use was to describe the science of movement, supplying & maintenance of military forces in the field. Later on it was used to describe the management of materials flow through an organization, from raw materials through to finished goods. It means for giving inputs which ultimately work for the final consumer or to delivery.

According to the Council of Logistics Management, logistics contains the integrated planning, control, realization and monitoring of all internal and network-wide material, part-and product flow including the necessary information flow in industrial and trading companies along the complete value-added chain (and product life cycle) for the purpose of confirming to customer requirements. It can be divided in Performance and cost related to fulfil the target. For the viewpoints, the inbound logistics concentrates on purchasing to manufacturing or assembly plants. Out bound logistics are related to storage to the end user with information flow.

The main fields are:

- Procurement Logistics
- Production Logistics
- Distribution Logistics
- After sales Logistics
- Disposal Logistics

**Procurement Logistics** consists of activities such as market research, requirements planning, make or buy decisions, supplier management, ordering, and order controlling. The targets in procurement logistics might be contradictory - maximize the efficiency by concentrating on core competences, outsourcing while maintaining the autonomy of the company, and minimization of procurement costs while maximizing the security within the supply process.

**Production logistics** : The term production logistics is used to describe logistic processes within The Textile industry. The purpose of production logistics is to ensure that each machine and workstation is being fed with the right product in the right quantity and quality at the right time. The concern is not the transportation itself, but to streamline and control the flow through value-adding processes and eliminate nonvalue-adding ones. Production logistics can be applied to existing as well as new plants. Manufacturing in an existing plant is a constantly changing process. Machines are exchanged and new ones added, which gives the opportunity to improve the production logistics system accordingly. Production logistics provides the means to achieve customer response and capital efficiency.

Source: fibre2fashion.com
AHMEDABAD BRANCH

Report on 09th February 2019 : Ahmedabad Branch organized a talk on “GOLDEN RULES TO FOLLOW WHEN TAKING A LOAN” by Ms. REEMA THAKKAR, who is Entrepreneur, at “FINANCE MARKET” her own venture with better half and group of likeminded people., in lecture hall of Ahmedabad Management Association on 09th February 2019 under its Knowledge Augmenting Series. Audience consisted of 41hard-core professionals who enjoyed the talkthoroughly.

Branch Chairman Mr. Pankaj Panchbhai mentioned in his inaugural talk:

Dear IIMM Family good evening...

Speaker of Day Ms. Reema Thakkar, Members of Ahmedabad Branch, Today’s Invited Guests, Ladies and Gentlemen, I extend a very warm welcome to you all on behalf of Executive Committee of IIMM Ahmedabad.

Mr. D.K.Goswamy will soon introduce him and the subject.

Friends, IIMM is a very unique institution having 55 branches across India and Ahmedabad is one of them. Out of national membership of 10000 we in Ahmedabad Branch contribute 386 members and we are targeting further for 500 marks. Some of you who are still not member should acquire membership
Way back in 1973, the signature tune of Doordarshan is black'.

Henry ford's famous quote is 'Any customer can have a car painted any color that he wants so long as it is black'.

In olden times, we used to work for entire life and then after the retirement a house was made with own savings. Now, the first thing we do is own an asset - a house, a car and pay later. Welcome to the new world of lending.

In 18th century India, the money lenders became very powerful as the Mughal Empire was on decline.

The 1953 movie Do BighaZamin by Bimal Roy narrates the harrowing experience of a farmer who took loan from a money lender. Farmer’s loan waiver is every day’s talk now. India recently took a soft loan from Japan for Bullet train @ 0.1% interest rate and the repayment would start after 15 years.

In 1973, the signature tune of Doordarshan was first brought to life by Ustad Ali Ahmad Hussain Khan through his shehnai. Only one channel - no fight for the remote.

When TRAI recently asked to choose the TV channels, there was a chaos as the consumers were confused about what to have and what to leave. The tariffs of individual channels have increased but if consumer chooses judiciously then he would actually save some amount.

Welcome again to all of you on this coldest day of the season. The North America is freezing with polar vortex where the temperatures have gone subzero. You would find many icebergs floating in the ocean. 90% of the iceberg is below the water surface and what we see is only 10% of the ice on the surface.

The Business Today mentioned yesterday about that RBI cuts 25 bps repo rates - If you have home loan of Rs 50 lakhs. Today’s feed on Moneycontrol.com mentioned SBI cuts interest rate by 5 bps on home loans up to Rs 30 lakh. What we read and try to digest is the interest rates and get confused with the jargon like bps and repo rate.

This is tip of iceberg. We are rarely going beyond the interest rate as we are shown only a part of the picture. The bulk of understanding goes in the fine print that we never try to understand. The lenders have a happy time to fish in the troubled waters.

Most wise people ask for an expert help to find the right product and right lending agency. We are fortunate to have the expert for today’s evening - Ms. Reema Thakkar to get some answers.

Ms. Reema Thakkar is an MBA with specialisation in Finance. She has over eleven years of professional work experience in the field of financial services. She started her career with India Bulls. Presently, she is working as an entrepreneur and established her company Finance Market. She is working as Consultant for Corporate and Individual Finance, Secured and Unsecured Business Finance like Project Finance, Working Capital Limits, CC, OD, Home and Mortgage Finance.

She is regularly undertaking seminars on Finance at various B Schools and other forums. She has helped many entrepreneurs to nurture their dreams which were dying due to the burden of bureaucratic red tapes of financial institutions.

She would deliver her talk today on Golden rules to follow when taking a loan.

Please put our mobile on silent mode after informing your spouse that you are in an urgent meeting.

Now, let us welcome Ms. Reema Thakkar with a big round of applause.

Let us welcome him with a big round of applause.

Synopsis of Ms. Reema Thakkar’s talk on “Golden rules to follow when taking a loan” is as follows.
7 rules to follow when taking a personal loan

It has never been easier for salaried borrowers to access credit. Even so, here are a few things you must keep in mind before you seal the deal.

There was a time when your paycheque made you eligible for marriage. Now it makes you eligible for credit, including unsecured personal loans and credit cards. Personal loan disbursements have grown at a scorching pace over the past two years. Banks and NBFCs, flush with funds after demonetisation, have relaxed lending terms and are using technology to make the process quicker and easier. Some banks claim to disburse loans within seconds of receiving the application. To cut a long story short, it has never been easier for salaried borrowers to access credit. Even so, here are a few things you must keep in mind before you seal the deal.

Pick the lender with care: Banks and NBFCs are carpet bombing customers with offers of personal loans at what they claim are very low rates. Don’t fall for the first offer you get on email or via SMS. Although it is convenient to say yes to a bank with which you already have a relationship, you may be missing out on better deals if you don’t research the market thoroughly. Shop around for the lowest rate using a loan aggregator website.

Calculate the interest rate: When it comes to financial juggling, you can’t beat banks. The flat rate of interest is an oft used method to lure business. The flat rate is a misleading metric, because it does not take into account the reduction in the balance with every EMI paid by the borrower. For instance, if you borrow Rs 5 lakh for three years at 12%, the total interest outgo will be Rs 97,857. The average interest paid per year is Rs 32,620, so the flat rate comes to barely 6.5%, which makes the loan look very attractive indeed. Keep in mind that if you are repaying a loan with EMIs, the interest should be calculated on reducing balance. The flat rate will not tell you the actual cost of the loan.

Shun 0% EMI schemes: The 0% EMI scheme is a clever ploy that lenders use in conjunction with distributors of consumer durables and lifestyle products. The RBI has clamped down on such schemes but some lenders continue to offer these on the sly. They offer an interest free loan to the buyer. People fall for this without realising that the high processing fee and file charges for the loan is where the lender is making a killing. If you buy a washing machine worth Rs 50,000 at 0% interest for six months by paying a processing charge of Rs 2,000, you have effectively paid more than 14% interest on the borrowed amount.

Don’t opt for advance EMIs: Advance EMIs is another way that borrowers end up paying more than the contracted rate. Some lenders ask the borrower to pay 1-2 EMIs in advance at the time of taking the loan. If you take a loan of Rs 1 lakh for 18 months at 14%, the EMI comes to Rs 6,190. But if you pay two EMIs in advance, the effective loan amount come down to Rs 87,620. An EMI of Rs 6,190 means you are paying an interest rate of 17.5% instead of the 14% you are given to believe.

Check the other charges: Personal loans usually come with a processing fee, but some lenders slip in other charges as well. It may appear that a processing fee of 1-2% is not very high, but there is usually a minimum flat fee payable. Check the charges before you opt for the loan to avoid any heartburn later.

Find out about foreclosure rules: While the RBI has directed banks not to charge foreclosure charges on home loans, other forms of credit still attract prepayment penalties. Lenders charge a fee if you pay off your loan early because early repayment prevents them from earning the interest they had expected from the deal. If the loan tenure is longer than 2-3 years and you expect your cash flows to improve in the coming months, it is advisable to pick a loan with the lowest foreclosure charges.

Don’t approach too many lenders: Shopping around for the lowest rate can also prove counterproductive. Every time an individual approaches a lender for a loan, his credit score is accessed to understand his ability to repay the loan. If you approach too many lenders individually, you might be seen as a credit hungry person and your credit score could take a beating. This why it makes financial sense to go through a loan aggregator portal to zero in on the best loan without compromising your credit score.

Mr. Rakesh Gupta, Hon. Secretary in his closing remarks said:

Dear Friends,

We are grateful to our very senior Past Chairman Shri D.K. Goswamy who have facilitated the talk of today’s speaker Ms. Reema Thakkar. We thank Mr. Sudhir Shah for updating us on membership front. Mr. Shah informed that Ahmedabad Branch is nearing 400 membership mark. We thank Mr. Anil Patil for sharing the education details, which is a good revenue resource for us.

Today we heard Ms. Reema Thakkar on a different but important topic about Golden rules to follow when taking a loan. We understood the hidden charges being levied by different banks while taking a loan. As a nonprofessional, we are not aware whether the same is correct or mandatory. We have today received the guidelines, which should be followed while obtaining different type of loans.

On behalf of all, I express our sincere thanks to Ms. Reema Thakkar for sparing her time to address us. I must also thank our members and guests for their qualitative participation.

We heartily welcome our new life and annual members mostly young ones, will be the future pillars if IIMM. Please take advantage of the week end training programs on Materials Management. We request the guests to obtain the membership form and we assure that you will get value for money invested rightly.
Planning for a mega program/seminar is in pipeline. We look forward to your effective participation in large numbers in this event.

**BANGALORE BRANCH**

22nd February 2019 (Friday) – Evening Lecture Program:
Indian Institute of Materials Management, Bangalore organized Monthly Lecture Program on “Challenges of SCM for a tier 2 in VUCA” by Mr. Sri Harsha V. Dy General Manager Operations, Hycom Engineering for the benefit of IIMM Members & Students at Hotel Ajanta, Bangalore. Mr. P.M. Biddappa, NC members welcomed the gathering and speakers. Mr. Sagar Mudugal, Member introduced Speaker to the gathering.

A view of members participated lecture program 22.02.2019

Mr. K.V. Sudheendra, Branch Vice Chairman handing over a memento to Speaker Mr. Sriharsha V, DGM, Hycom Engg.

Mr. Sagar Mudugal, Member Introducing speaker to the Gathering on 22.02.2019 -Lecture Program (1)

Mr. C.S. Subash, E.C. Member, proposing vote of Thanks on 22.02.2019 Lecture Program

Mr. Sriharshan, DGM- Operations HycomEngineering, Mr. P.M. Biddappa, N.C. member on the dias on 22.02.2019 -Lecture Program

Mr. K.S. Mohankumar, Handling session on Vendor Management on 22.02.2019

Mr. T.K. Ramasubbu, Sr Faculty Handling session on Negotiation Skills on 22.02.2019
Mr. Sri Harsha V. Dy General Manager – Operations, Hycom Engineering, handled the session. This was one of the excellent lecture program delivered on subject “Challenges of SCM for a tier 2 in VUCA” The lecture program was very interesting and all participants and members more interacted with the speaker and exchange their views. Mr. K.V. Sudhindra, Vice Chairman honored the Speaker by offering a Memento. Mr. C.S Subash, E.C. Member proposed vote of thanks.

22nd and 23rd February 2019 – Two Days Workshop: Indian Institute of Materials Management (IIMM), Bangalore Branch organized a two days Workshop on “Vendor Management and Negotiation Skills” on 22nd and 23rd February, 2019 at Ramanashree Bronton Hotel, Off M.G. Road, Bangalore. This workshop was well designed for Practicing Professionals holding middle or senior positions in Procurement / Purchasing / Export- Import / Materials Management / SCM and Finance Professionals. 15 participants from various organizations from all over India attended the workshop. Sessions were handled by Mr. T.K. Ramasubbu, Mr. K.S. Mohan Kumar, Mr. P. Srinivas Rao, & Mr. Swaminathan, Senior Faculty of IIMM. The workshop was very interesting with good interaction from the participants and speakers. The feedback received from participants has been rated at “Very Good”.

A group photo, Delegates participated in Two Days workshop on 22,23.02.2019 at Ramanshree Bronton Hotel

Mr. P. Srinivas Rao, Sr. Faculty, invloved participants in role play in Two days workshops on Negotiation Skills on 23.02.2019

KOLKATA BRANCH

PROGRAMME ORGANIZED DURING JANUARY & FEBRUARY, 2019 BY IIMM KOLKATA

ANNUAL PICNIC : IIMM Kolkata Branch organized Annual Picnic in a picturesque Guest House at Chandanpur, Singur, Hooghly, on Durgapur Expressway, 50 km. away from the congested city, on Sunday, the 20th January, 2019. Members with spouse, their children and guests participated in the Annual Picnic in a large number. A luxury bus was arranged to bring the participants to the picnic spot. Members also availed their own vehicles to attend picnic and altogether 110 participants were there to enjoy the whole day with mouth watering breakfast, outdoor sports activity for all age group and with sumptuous lunch.

Inauguration of GDMM 61 Batch- January Session 2019 : On 3rd February, 2019, GDMM 61 Batch, January 2019 Session, was inaugurated formally at IIMM Kolkata Branch Office. Altogether 27 participants have been enrolled so far and it is expected that the enrolment may reach up to 35 by the next two weeks. Mr. Kallol Ghosh, Hony. Secretary and Mr. Kaushik Mukherjee, Hony. Treasurer, attended the inaugural programme.

Mr. D K Acharyya, Course Co-ordinator, formally inaugurated the Course and briefed the students about the Course Curriculum. Mr. Kallol Ghosh, Hony. Secretary, while welcoming budding professionals in
IIMM Family, also shared what are expecting from qualified supply chain professionals in industry. Mr. Kaushik Mukherjee, Hony. Treasurer, proposed Vote of Thanks. The Inaugural Programme was followed by working lunch. Students were also handed over IIMM Kit, Study Materials and Class Schedule for the 1st Semester.

LUCKNOW BRANCH

Report on the lecture held on 3" Feb 2019 : IIMM, Lucknow arranged One day Lecture programme at their newly build conference hall in their premises in Lekhraj Dollar. The programme was restricted to senior members of 60 and above and students of PGDMM & PGDSCM&L. This was due to the fact was a talk by Dr. Anil Kr. Jha, senior cardiologist from Mahagujarat Hospital, Nadiad, Gujarat who has performed approx 5000 open heart surgeries all over the world. He has visited USA, UK, Sweden, China, Japan, etc. In his address he spoke about Stress Management. Topic of the lecture is death scientific and philosophical perspective.

Our branch received many awards like best faculty award to Dr. K K Mishra Director Sherwood Management College, Best branch chairman award to Mr. Manoj Rastogi Additional General Manager (IMM) Hindustan Aeronautics Limited Lucknow Division LKO, Distinguished member award to former AGM Mr. Laxmi Narayan from HAL, Lko Division, LKO & individual membership growth award to Mr. Masshuddin, chief supervisor, HAL Lko & CBS Rathare Ex Store Officer from HAL, Lko Division. All awards distributed by Dr. Anil Jha to individuals.

At last vote of thanks was given by Mr. Brijesh Singh DY General Manager Tata Motors, Lko. Above programme was followed by Lunch.
MUMBAI BRANCH

INDUSTRIAL VISIT TO INDIAN EXPRESS FACTORY:

IIMM had organized the visit to Indian Express Factory on 12 Jan 2019 to understand the supply chain and value chain in Newspaper Industry. Mr Shakespeare Dutta coordinated the visit.

The Indian Express factory is equipped with state-of-the-art machinery. It was fascinating to see the gigantic continuous feed printing machines sucking in rolls of newsprint, printing on both sides of the paper, collating different pages, folding the pages and finally making a heap, to be tied in bundles in another machine.

Since the entire production has to be finished before the deadline, (which is around 3 am), 100% availability of machinery has to be ensured with no downtime. The maintenance of the machines has to be faultless. The requirement of newsprint, spare parts and consumables has to be forecast accurately and delivered just in time to reduce inventory cost. Trained and experienced maintenance personnel have to be available round the clock. Production people have to weigh the cost of 24-hour maintenance against the management’s emphasis on reduced manpower. The newspaper is a unique industry where the product is low cost and the product cost is actually higher than the selling cost. (Revenue source is advertisements which depends on the circulation of the newspaper.) Any loss in production cannot be made up later, since the product will be obsolete by the evening of the same day. The supply chain managers have to be on their toes to ensure that there are no breakdowns and shortages of any type. Last but not the least, rapid advances in news dissemination and printing technology lead to rapid obsolescence of high cost machinery.

PUNE BRANCH

IIMM, Pune Branch organized a lecture on “Study of Socio-Economic conditions and Productivity mismatch among the Long-Haul Drivers of India” which was held on Friday, 8th February 2019 at the Branch Office. The Lecture was delivered by Mr. Prof. Rakesh Pathak.

Rakesh Pathak is a professor of Strategy and Governance at IBS Business School, Pune. He holds a Joint Post Graduate Diploma in Management from IIM Calcutta and IIT Chennai, and has Master Degree in Manufacturing Management from BITS Pilani, Rajasthan. Prof. Rakesh Pathak worked in corporate sector for 18 years in various capacities in Indian, Swiss US, & Japanese manufacturing multinationals such as Scope Logistics, Burckhardt compression, RSB Transmission, Royal Enfield, Toyota, Shenise Bank, Mitsui Chemicals Japan. His area of expertise includes Business and Manufacturing strategy. Professor Rakesh Pathak is a Certified Independent Director from the Institute of Directors, (IOD), India, and serves as an advisory member on academic’s boards and...
committees of business Schools. He is Certified Accredited Management Teacher (AMT) by AIMA.

This lecture was based on his Research Study Paper which he presented in IIM Bangalore in December 2018. This study is an attempt to understand the gradual plight of Truck drivers in logistics industry in India due to mismatch between management practices and job requirements. The declining of productivity among long haul truck drivers due to high level of stress has deteriorated the well being of truck drivers and so is the socio economic condition. The aim of the current study is to find wellbeing of truck drivers on the basis of job satisfaction in trucking industry. This paper is based on primary and secondary data, which has been collected by interviewing around 80 truck drivers, Truck owners of trucking companies based in Pune and Mumbai truck terminals. The industry angle has also been taken into consideration while assessing this truck drivers. The results of the research also indicate that most of the truck drivers are not satisfied with their working environment, compensation and working hour’s. The study will be helpful to drawn up further policy in developing and act as beneficial factor for input to truck industry. Thus, the study makes a unique contribution to the theory, practice and society. Limitations, implications and future area of research are also proposed in this paper.

The program was attended by more than 30 members at the Branch Office. Prof. Rakesh Pathak was honored for this informative knowledge sharing and given a memento by the Chairman, Mr. Amit Borkar. Mr. Shashikant Kulkarni introduced the speaker and also proposed the vote of thanks.

VADODARA BRANCH

An Evening Talk held on 14th DEC’18 : An Evening Talk with topic ‘FINANCIAL PLANNING’ was held on 14/12/18 by Mr. NEHAL PANDYA and attended by around 25 persons comprising of members, etc. Mr. Nehal Pandya holds Post Graduate Degree in Business Management (PGDBM) from M.S.University of Baroda. His profile includes senior position in companies like NJ INDIA INVEST, ICICI PRU AMC, IIFL and ROYAL BANK OF SCOTLAND (ABN AMRO BANK) with over 20 years of experience. He is founder of PROMINENT FINANCIAL with a vision and foresaw the need for mutual funds that performed regardless of market environment and provided financial professionals, investor clients with flexibility needed to respond to both changing market conditions and personal investment goals. He saw the need for an investment firm that listened to its clients, understood their challenges and anticipated solutions to solve their problems. He shared details about financial markets & wealth advisory services. He introduced exclusive Prominent Financial Wealth Relationship (PFWR) which represents the finest standard of relationship advisory, offering an enhanced level of service to the most demanding elite to help make the most of “every opportunity” to grow their wealth. The Event glimpses are shared in photos given below –
Ms. Krishna Shah informed future training programmes. The Participation Certificates were distributed to participants by Mr. Notani & Mr. Sanjay Kadam with following photos depicting highlights of training programme –

- Mr. L.L. Notani delivering lecture during Training Programme
- The participants attending Training Programme
- Participation Certificate being handed over by Mr. L.L. Notani
- The Group Photo of Participants at the end of training session

An Evening Talk held on 18th JAN’19: An Evening Talk with topic ‘GOVERNMENT e-MARKETPLACE’ was held on 18/01/19 by Mr. Milan Shah and attended by about 20 persons like committee members, etc. Mr. Milan Shah has completed PG Diploma in Industrial Purchase & Materials Mgmt. from MSU, Baroda, PG Diploma in Export Import from Indian Institute of Export Import, Vadodara, Certificate course in Finance Management and Diploma in Taxation Laws & Practice from MSU, Baroda. He has done SAP Overview Course from SAP, BSE’s Certification on Central Depository from Bombay Stock Exchange and Association of Mutual Funds in India from National Stock Exchange. He is working with Prakash Teleservices Pvt. Ltd. (Prakash Group) as Manager – Procurement. The following points were covered in Evening Talk – GEM Overview - 
  For Buyers:
  (a) Buyer Registration
  (b) Procurement of Product
  (c) Procurement of Services
  (d) Payment
  For Sellers:
  (a) Seller Registration
  (b) Catalog Management
  (c) Order Processing

The Event Photos are given herewith –

- Mr. Sambhudevan Nair sharing the Profile of Speaker
- Mr. Ajay Shukla welcoming Mr. Milan Shah with Flower Bouquet
- Audience keenly listening during Talk
Training Prog. for Participants from ORIENTAL CARBON & CHEMICALS LTD., Mundra in JAN’19: One day in-house training programme on ‘Inventory & Warehouse Management’ topic was organised on 11th JAN’19 at Plant premises of ORIENTAL CARBON & CHEMICALS LTD. in Mundra SEZ at Kutch for about 20 Nos. of participants from Purchase, Warehouse, Logistics & Production Dept. wherein faculty Mr. L.L. Notani conducted the training programme. The HR Executive, Mr. Avaneesh Mishra had sent mail to us in OCT’18 regarding their training requirement for personnel wherein points to be covered in above topics had been planned & sent for their approval. Then, commercial aspect alongwith training schedule was finalized & forwarded for their confirmation. The Presentation & Exercises for participants had been sent by Faculty for preparation of Ref. Mtrl. booklet by us. The training prog. was very much successful with Excellent feedback received from participants giving assurance to attend our other training programmes. Also, the brochure of MDP/MLS Seminar scheduled in FEB’19 was shared with Mr. Avaneesh who intimated to surely send participants for same. He informed to plan next training prog. with ‘Negotiation Skills’ topic. The Participation Certificates were distributed to participants by Mr. Notani & Mr. Rajesh Verma-HR Head with following photos highlighting the training programme.

CUSTOM EXCHANGE RATES  
(All rates per unit) w.e.f. 18th January 2019

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<th>CURRENCY</th>
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Source: www.dailyshippingtimes.com/custom-exchange-rates.php
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Details about final Training Schedules & Faculty will be emailed to the participants on receipt of the applications.

Venue: Conference Hall, IIMM National Headquarters, Belapur, Navi Mumbai.

Course Fee: - Rs. 5000/- per day for Fundamental Course & Rs.6000/- per day for other courses+ 18% GST, as applicable - Includes Tuition Fee, Course Material, Participation Certificate, Break Fast, Working Lunch & Tea/Coffee.

Boarding & Lodging Charges (Optional): - Rs.3000/- per day per participant + 18% GST (AC Twin Occupancy. Single Occupancy may be made available on request)

Discounts:-
1. 10% to IIMM members
2. 5% for early birds (to individual participants, on receipt of nomination, before 20 days of the commencement of course)

Group Discounts:-
1. 10% for 4 to 10 participants from the same organization
2. 15% for more than 10 participants from the same organization

Refund Rules:-
1. Fees once paid can be adjusted towards future nominations up to 2 years
2. In case of cancellation of course, due to inadequate participation or for any other unforeseeable reasons, the participants will be informed by e-mail or fax and the fee will be refunded.

Enrolment: - Personal details: Name, Designation, Mobile No & E-mail id, Age, Qualification, Experience, functions & Present Organization of the participants along with the fee through ECS/NEFT (BOIA/C No:0116101000005741 & IFSC code:BIKID0000116) or by Demand Draft drawn in favor of “Indian Institute of Materials Management” payable at Mumbai, may be sent to: Mr. Laxman Singh Bisht, Senior Faculty, (MM), IIMM National Head Quarters, Sector-15, Institutional Area, CBD Belapur, Navi Mumbai - 400614. (E-mail: imimmho55@gmail.com Mobile No: 9769197851)

Faculty: Trainers are highly qualified professors/ Senior Practicing Managers/ SCM Professionals with over 15 years of rich industry experience in the relevant field.

Pedagogy: Presentations, Discussions, Audiovisuals, Case Studies, Role Play
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INDIAN INSTITUTE OF MATERIALS MANAGEMENT
Plot No. 102 & 104, Sector 15, Institutional Area,
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Tel.: 022-27565831, 27561754, 022-27565592
E-mail : iimmnhq@mtnl.net.in

Name : _____________________________ Sex : □ Male □ Female
Designation : _______________________________________________________________
Name of Organisation : _______________________________________________________
Office Address: ____________________________________________________________________________________________

____________________________________________________________________________________
Telephone/s_________________________ Fax ___________________________ E-mail ______________________________
Home Address: ____________________________________________________________________________________________
Telephone/s_________________________ E-mail ______________________________
Educational Qualification: __________________________________________________________________________________

Work Experience (Start with present position) Please attach separate sheet where necessary)

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Membership of any other Professional Organisation____________________________________

Your Date of Birth_________________________________________________________
Where will you like to receive the IIMM Mail? □ Office □ Home

UNDERTAKING : I wish to apply for the membership of the Institute with appropriate
status. I certify that all information supplied in the application is true and correct.
Date: ________________________ Applicant’s Signature _______________________

REFERENCES : It is required that referees should be executive of firm including
your immediate senior (not relative) who have a personal knowledge of the candidate.
They must have actual knowledge of our responsibilities and one of them should
be member of IIMM.

Signature 1st Referee _____________________________ Signature 2nd Referee _____________________________
Name __________________________________________ Name __________________________________________
Designation _____________________________________ Designation _____________________________________
Company _________________________________________ Company _________________________________________
Phone __________________________________________ Phone __________________________________________
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(Signature 1st Referee _____________________________ Signature 2nd Referee _____________________________
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E-mail: iimm2delhi@gmail.com & iimmdelhimmr@gmail.com
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Advertisement material alongwith Cheque / Demand Draft should be drawn in favour of
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4598/12 B, Ist Floor, Ansari Road, Darya Ganj, New Delhi - 110 002.
Phones : 011-43615373 Fax: 91-11-43575373
E-mail: iimm2delhi@gmail.com & iimmdelhimmr@gmail.com Website : www.iimm.org

Add Rs. 20/- Extra for Outstation Cheques.
Pollution is a process of making the environment dirty, unhealthy and unsuitable for humans and animals to live. It is caused due to the release of both tangible and intangible contaminants. These can be released naturally or by humans themselves accidentally or deliberately.

More than 200 million people are affected due to toxic pollutants. Due to pollution, there are few countries that have faced deflected child birth and increase in mortality rate. Humans are regularly exposed to pollution when they inhale toxic air inside them.

Pollution can be controlled, if not eliminated. Efforts such as promoting green environment, proper disposal of waste, etc are simple steps that lead to great emphasis on maintaining the order of environment.

Preventive measures:

1. Plant trees/cultivate garden to curb polluted air and release more oxygen.
2. Switch off electricity-based equipments when not in use: lights, fans, machines, etc.
3. Make high use of natural energy than electric energy: dry the clothes naturally.
4. Use recyclable products, wherever possible.
5. Avoid plastic bags and use paper bags.
6. Avoid wastage of paper and use both the sides.
7. Restrict usage of hazardous chemicals.
8. Don’t overuse heaters and air conditioners.
9. Use public transport to reduce noise, air and light pollution.
10. Protect Mother Earth by not spilling oil, garbage, sewage water, etc at undesirable places.
11. Stop burning of crackers during marriages, Diwali, etc.
12. Don’t dispose off eatables, packaging in oceans, rivers, etc.

Pollution disturbs our ecosystem and the balance in the environment. By following the above simple points, we all can restrict pollution at our own level. Each year millions of people die due to various diseases caused by pollution. The key to live a healthy life is to protect the environment from pollution.

The increase in the pollution level over the years by human and natural causes has caused severe damage to the earth’s ecosystem. Lifestyle, habitat, etc, everything is being adversely affected. Though natural causes cannot be stopped, but human beings’ accidental and deliberate actions can easily be stopped which surely will result in the control of pollution generation.

Types of Pollution:

Major pollutions and their causes:

1. Land Pollution – Wastes collated at Earth’s surface, garbage on roads, industrial debris, pesticides, insecticides, etc. Unwanted wastes lying and being decomposed release harmful gases and lead to pollution.
2. Water Pollution – Wastes disposed of in rivers, oceans act as pollutant in water bodies. Raw sewage, oil spills, chemical refuse, etc create poisonous water and hence lead to water pollution.
3. Air pollution – Burning of fossil fuels, release of gases from vehicles release mono-oxide, carbon-di-oxide, industrial pollution, nuclear radiations etc lead to air pollution.
4. Noise Pollution – Vehicle horns, loud music, construction machinery sounds, and other human activities create noise. This affects humans and animals, their natural vegetation and create Noise Pollution.
5. Thermal Pollution – Manufacturing activities lead to rise in the temperature of water and land. This affects marine and plant life. Such activities lead to thermal pollution.

Source: IndiaCelebration.com

Pollution is an act of contaminating the environment by introducing certain hazardous contaminants that lead to disturbance of ecosystem and directly or indirectly affect the human beings, animals, plants of the ecosystem. Pollution causes the disturbance of the natural system and balance of environment.
Pollution is an undesirable change in the physical, chemical or biological characteristics of air, water and soil that may harmfully affect life or create potential health hazard of any living organism. Technological advancements done by humans are also one of the main reasons of pollution on the Earth.

Various types of pollution are caused, but mainly the following lead to life threatening and adverse effects on the humans:

1. Air Pollution: The most dangerous and common type of pollution, caused by release of harmful gases in the air. It is majorly caused due to the direct release of chemicals into the environment by industries. The polluted air we breathe goes into our whole body and affects all the body systems mainly the respiratory functions.

Causes of Air Pollution: Burning of fuels, smoke from vehicles, fireworks, burning of woods, and release of hazardous chemicals or chemical gases from industries or factories.

Effects of Air Pollution: Air pollution causes life threatening diseases like asthma, cancer, bronchitis, lung disorder, and many more. Depletion of ozone layer is also a cause of air pollution.

Solutions to prevent Air Pollution: Conserve energy, stop fireworks, reduce-reuse-recycle, usage of energy efficient equipments, usage of public transport, etc.

2. Soil Pollution: Release of harmful substances in soil is the major cause of contamination of soil. Soil pollution causes an indirect damage to humans and other animals. The nutrients taken by the plants are then transferred to the consumers that depend on these plants. Hence a soil consisting of contaminants will not only affect the plants growing on the soil but it will also indirectly harm the entire food chain.

Causes of Soil Pollution: Release of industrial wastes from large factories or industries, release of chemical wastes, agricultural chemicals, deforestation, use of pesticides, mining activities, burning of trees or plants, etc.

Effects of Soil Pollution: Soil pollution causes direct effect on plants growth, soil fertility, change in soil structure, toxic dusts, and chronic health problems to humans.

Solutions to prevent Soil Pollution: Reduce the use of plastics, reduce wastes, crop organic foods without using fertilizers and pesticides, use of biodegradable products, place liquid chemicals in the spill-proof containers, solid waste treatment, reuse and recycle things, etc.

3. Water Pollution: Major part of the Earth’s surface is covered with water and more than half of the total population of the species reside in water. Water is one of the most important natural resources for humans and natural vegetation to survive. Water used from a polluted lake directly contaminates its user.

Causes of Water Pollution: Direct incorporation of hazardous pollutants, Disposal of wastes in water from factories and industries, garbage disposal by humans in rivers, etc.

Effect of Water Pollution: Water creatures are on the verge of extinction, drinking contaminated water causes serious health disorders, etc.

Solutions to prevent Water Pollution: Don’t throw waste or rubbish in the rivers, oceans, use water wisely, don’t throw oil, medicines, harmful liquids in the water, buy environmentally safe liquids for cleaning purpose, etc.

4. Noise Pollution: Increase in noise level leads to Noise Pollution. It is not caused due to release of chemicals or toxins or hazardous gases but is just the loud noise generated in the environment. Noise is defined as the unpleasant sound that has an adverse effect on the human ear. Though the causes of this pollution are unlike others, but the effect of this pollution is as hazardous as other types of pollutions. It directly penetrates into human minds and leads to mental disorders as a major result.

Causes of Noise Pollution: Major cause is the honking of moving vehicles, loud music, running of machines at sites, radio, TV, etc.

Effect of Noise Pollution: Psychological illness, bad behaviour, irritation, hypertension, depression, forgetfulness, annoyance, stress, aggression and many more. It not only affects humans but also animals and many times lead to their cause of death due to unbearable level.

Solutions to prevent Noise Pollution: Obey the rule of no-honking until and unless necessary, construction of soundproof rooms for the heavy machines, no misuse of loudspeakers, growing trees along with roads are some of the ways to absorb sound.

Conclusion: With the rising rate of pollution over the years, there is a worrisome increase in the rate of human diseases, and death rate of humans, various animals and plants on earth. Though pollution is released both by natural and human activities, but majorly it is created due to human activities, which can easily be minimized to reduce the pollution rate.

Source:
IIMM has set up CRIMM in Kolkata jointly with the Techno India University, West Bengal, a leading Private University, with an aim to promote research and consultancy in Materials Management discipline.

Applications are invited from intending candidates across the country to enrol for the research programme leading to certificate of fellowship.

The candidate should possess:

- Graduation in any discipline with minimum 50% marks, and
- GDMM/PGDMM/PGDSCM&L from IIMM with at least 55% marks, or
- Masters degree in any discipline or equivalent post graduate professional qualification with 50% marks.
- Experience in working in Materials Management or allied area in any industry/organization.

In case of highly experienced candidates in the field of Materials Management with graduation in any discipline OR in case of graduates in Engineering, need of the masters degree may be waived with discretion of CRIMM authorities.

There is no age limit for registration.

Successful Research Associates from CRIMM shall have the unique opportunity to pursue PhD in Techno India University, West Bengal with condensed course work.

For enrolment and further details, please contact:
Ms Paramita Sen (M : 9433530975) / Mr. Partha Sen (M : 9674794042)
or visit Vice Chancellor's office at Salt Lake campus of Techno India University, Kolkata.
# Build Your Career

**INDIAN INSTITUTE OF MATERIALS MANAGEMENT**

**AICTE APPROVED COURSES (PGDMM / PGDSCM&L)**

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<td>1</td>
<td>Post Graduate Diploma in Materials Mgmt Unv.</td>
<td>AICTE</td>
<td>Graduate in any discipline from any Recognised Univ.</td>
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<tr>
<td>2</td>
<td>Post Graduate Diploma in SCM &amp; Logistics</td>
<td>AICTE</td>
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<td>2 Years</td>
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<td>3</td>
<td>Graduate Diploma in Materials Management</td>
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<td>Accreditation, Graduate or Diploma in Engg./Pharmacy/Hotel/Hospital + 2/3 Yrs Exp.</td>
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<td>4</td>
<td>Professional Diploma in Public Procurement</td>
<td>World Bank</td>
<td>Graduate in any Discipline or Diploma Holders</td>
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<td>5</td>
<td>Certified Purchase and Supply Manager (CPSM)</td>
<td>ISM - USA</td>
<td>4 years degree + 3 years of Relevant experience or 3 years Degree + 5 years of Relevant experience</td>
<td>6 Months</td>
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<tr>
<td>6</td>
<td>International Purchasing &amp; Supply Chain Mgmt</td>
<td>ITC - Geneva</td>
<td>3 Year Degree + 2 years of Relevant Experience</td>
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**INTERNATIONAL COURSES**

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<tr>
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<tr>
<td>8</td>
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<td>Graduate or Diploma in any discipline or 10+2 with 3 Yrs Exp.</td>
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<td>9</td>
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<td>Graduate or Diploma in any discipline or 10-12 with 3 Yrs Exp.</td>
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**IIMM SKILL DEVELOPMENT CERTIFICATE COURSES**

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