

The Prime Minister, in his address on 12th May 2020, gave a clarion call for **Atmanirbhar Bharat** (self-reliant India).

Five Pillars of Self-Reliant India

- **Economy** - which brings in quantum jump and not incremental jump
- **Infrastructure** - which should become the identity of India
- **System** - based on 21st century technology driven arrangements
- **Vibrant Demography** - which is our source of energy for a self-reliant India
- **Demand** - whereby the strength of our demand and supply chain should be utilised to full capacity

Atmanirbhar Bharat Abhiyan

- Package of Rs. 20 lakh crore, (about 10% of India's GDP)
- Focus on Land, Labour, Liquidity and Laws
- To cater to labourers, middle class, cottage industry, MSMEs and industries among others

Bold Reforms: Need of the hour

- Supply Chain Reforms for Agriculture
- Rational Tax System
- Strong Financial System
- Simple and clear laws
- Capable Human Resources

Industry 4.0

- Industry 4.0 represents the **fourth revolution** that has occurred in manufacturing. It is signalling a change in the traditional manufacturing landscape.
- It encompasses **three technological trends** driving this transformation: **connectivity, intelligence and flexible automation**.

Different Industrial Revolution: A look

- The **first industrial revolution** (1784) came with the advent of mechanisation, steam, power and water power.
- The **second industrial revolution (1870)** revolved around mass production and assembly lines using electricity.
- The **third industrial revolution** (1969) came with electronic and IT systems and automation.
- The **fourth industrial revolution** (today) is associated with cyber-physical systems.

Different Technologies helping the Pace of Industry 4.0

- The Internet of Things (IoT)
- Smart Manufacturing, Smart Factories
- Big Data
- The Industrial Internet of Things (IIoT)
- Cloud Computing
- Cognitive Computing
- Cyber-physical Systems (CPS)
- Additive Manufacturing
- AI & Blockchain

Impact of Industry 4.0

- **Near real time communication** between systems.
- **Cost effective decentralized decision** – These digital technologies can create virtual versions of real-world installations, processes and applications. This can then be robustly tested to make cost effective decentralized decisions.
- **Disruptive Change in the process** - Computers are connected and communicate with one another to **ultimately make decisions without human involvement**.
- **Creation of Smart Factory** – Due to the support of smart machines that keep getting smarter as they get access to more data, our factories will become more efficient and productive and less wasteful.
- **Creation and Sharing of Vast amount of data** – Which in turn will help in future planning and decision making.

Changing Scenario Making Industry 4.0 Inevitable

A. Radical Pace of Innovation

- Innovation is fundamentally undergoing a radical change. It is becoming more **complex, connected and contextual**. This is due to:
 - mounting pressure to transform – to shift from **product centric business models to creation and capturing different sources of new value proposition**.
 - product innovation is continually giving way to technological innovation.
 - greater realization that **customer is at the epicenter** of the economy. Hence, products and services are enhanced through the digital capabilities that boost their value and worth.

B. Emerging Digital Business Models

- Digital management is enabling an organization to create new business models with potential to increase the customer satisfaction.
- Industry 4.0 would enable us to understand changing choices of customers and provide more tailored presales and post-sales support to manage the entire lifecycle

Industry 4.0 Post COVID – 19

- The business drivers of Industry 4.0 pre-crisis were focused on competitive advantage, cost reduction, productivity, sustainability and innovation. The goal was to make smooth businesses to run better.
- However, post crisis scenario would change dramatically. The focus for many manufacturers **now is survival first** and foremost and beyond that, damage limitation.
- Once survival is ensured, manufacturers would want to take their businesses to a stable region which can be called Business as usual in the new post crisis paradigm.
- To reach there as soon as possible at the lowest cost, they need **real time visibility across the business**. For example- What is the demand for products and where can we manufacture them?
- Another key learning from the crisis will be driven **by manufacturers' reliance on human capital and the impacts of social distancing**.
- In this context, it can be said that Industry 4.0 is not only as applicable as it was before but it is actually far more relevant.
- COVID-19 has provided another strong incentive to move towards a smart factory, complete with smart manufacturing smart printing processes.

Digital Transformation due to COVID-19

- The integration of digital infrastructure to streamline public health to respond to the COVID-19 pandemic is very crucial.
- It has helped in the context of epidemic forecasting and decision-making, one such example in India is the **Aarogya Setu app**. The fastest scalable solution to India's COVID-19 challenge was to employ digital technology for diagnosis and for contact tracing.
- The app can also be tapped for providing telemedicine, especially in remote parts, during this moment of crisis.
- Digital platforms have demonstrated its usefulness in the **enhanced corporate ability of long-distance collaborative work**, and the ability to market online and business development.

Conclusion:

- In the time of Coronavirus crisis, Digital Industry 4.0 plays a vital role in envisioning and modeling outbreaks.
- Organisations that adapt their technological capacity and investments on digital platforms can alleviate the impact of the COVID-19.
- This is also the dawn of a new era where 'frontline' workers and desk workers are harmonised with tools that can support the flow of collaboration and data, where something that happens on the factory floor initiates a communication or workflow in the back office.

AIM: Fostering Innovation

- Economist, **Thomas Malthus** had predicted that the **world couldn't support an exponentially increasing population**.
- However, new inventions and innovations in agriculture, mass production, transportation and communication during the Industrial Revolution proved Malthus wrong. Such is the power of **Innovation and Social Entrepreneurship**.

Social Entrepreneur

- Social entrepreneurs are focused on the delivery of public goods using business approaches.
- They combine their driving passion for improvement with the practical, innovative and opportunistic traits of the entrepreneur.

Social Enterprises: A Source of Innovation in India

- In India, Social enterprises are beginning to leverage Innovation. **SKS Microfinance** has successfully **innovated on the Grameen Bank Microfinance Model**.
- **Akshay Patra is the world's largest NGO-run school meal program**—it reaches 10 million children across five States of India, six-days a week. And they serve freshly cooked meals at Rs. 1.50 per meal.
- This was achieved through a '**technological innovation**: to prepare meals on large scale in a short time' and a '**logistics innovation**-to reach the meals to the schools'.

Atal Innovation Mission (AIM)

- Govt has set up AIM to promote a culture of innovation and entrepreneurship in the country.
- Six major initiatives have been taken in first year of its establishment:

- Atal Tinkering Labs
- Atal Incubation Centres
- Atal New India Challenges
- Mentor India Campaign
- ARISE
- Atal Community Innovation Centre

Initiatives under Atal Innovation Mission

1. **Atal Tinkering Labs** - at School Level, to create problem-solving mindset across schools

New Initiatives by AIM:

- ATL Gandhian Challenge - launched in all schools along with UNICEF.
- India Stamp Creativity challenge- launched with UNICEF and India Post.
- PM India Innovative Learning DHRUV Program – AIM invited as key partner by MHRD.
- Russia AIM SIRIUS ATL Student Innovation Exchange finalised.

2. **Atal Incubators at Universities, Institutions, Industry Level**

- To promote creation of a supporting ecosystem for start-ups and entrepreneurs, AIM has been establishing world-class incubators called Atal Incubation Centres (AICs) in universities.
- Some activities under this are:
 - **Indo French Knowledge Summit** at Lyon - 5 AIC startups received immediate funding interest by VCs
 - **Youth-CoLab Sustainable Innovation Challenge** along with UNDP–based on Gandhian Values.
 - **Entrepreneur World Cup National Innovation Challenge** - CCAMP AIC Startup emerged as India winner.
 - **Bill and Melinda Gates Foundation partnership** in AIC/Startup Training
 - **UNLEASH Startups Challenge** with Netherlands embassy support.

3. **Atal Community Innovation Centres - Serving Unserved and Under-Served Regions of India**

To promote the benefits of technology led innovation to the unserved/underserved regions of India including Tier 2, Tier 3 cities, aspirational districts, tribal, hilly and coastal areas, AIM is setting up Atal Community Innovation Centres.

4. **Atal New India Challenges - Product and Service Innovations with National Impact**

- To create product and service innovations having national socio-economic impact, AIM has launched over 24 Atal New India Challenges.
- 52 winners have been selected for grant aid and hand holding by Incubators/mentors.

5. **Applied Research and Innovation for Small Enterprises (ARISE)** - To promote innovation in a phased manner in the MSME/Start-up sector, AIM will be launching ARISE.

6. **Mentorship and Partnerships** - with Public, Private sector, NGOs, Academia, Institutions

To enable all the initiatives to succeed, AIM has launched one of the largest mentor engagement and management program “**Mentor India – The Mentors of Change**”.

Other Agencies Promoting Innovation

- The **Defence Institute for High Altitude Research (DIHAR)** in Ladakh has played an innovative and transformational role in accelerating the socioeconomic development of Ladakh.
- Initiatives like **solar energy based low-cost Green Houses & zero energy-based storage** have transformed vegetable & animal productivity and output, and even raised the tree line above 13000 ft.

- Additionally, the **Government of Karnataka has partnered with the Azim Premji Foundation** to innovate primary education in government schools. They have instituted an innovative process to assess the school's capability to build student competencies rather than mere marks.
- This will lead to many more students, passing out of primary school, having acquired the basic competencies.

Conclusion:

- It can be said that '**Innovation is for India, what quality was for Japan; a transforming agent**'.
- This momentum should be built to the point so as to make India the Innovation Capital of the world.

Social Media: The Force Multiplier

- Social media has become a game changer in the way federal, regional, and local government agencies are engaging, interacting, and communicating with citizens.
- Inexpensive mobile phones, cheap bandwidth and data-plans, vernacular content etc. have helped in amplifying social media's reach and impact even in the rural hinterlands of the country beyond the large cities and towns.

Beauty of Social Media

- Universality and pervasiveness
- Simplified user experience
- Not limited by distances and boundaries
- The virtual world is all encompassing and hence the entire world has become a global village. (*"The Internet is becoming the town square for the global village of tomorrow"* – Bill Gates)

Ways in Which Indian Agencies are Using Social Media As a Force Multiplier:

1. **Crisis / Disaster Management** - Social media is now increasingly being used by governments to reach out to citizens during such crisis. Two recent examples bear out this trend—
 - **Cyclone alert from the NDMA** on India's eastern coasts (in the state of Odisha)
 - An **advisory from PIB** to citizens for the lockdown imposed due to COVID-19.
2. **Citizen Engagement - MyGov platform** has proven to be popular with citizens in this regard.
3. **Citizen Grievances & Support** - It acts as a real-time channel for citizen grievances and support. For example - Grievance filed by a traveller on Indian Railways to the Railways Bengaluru Division was sorted out immediately.
4. **Law & Order** - Delhi Police advisory on Twitter is a telling example how police uses social media to alert citizens about circulating rumours and maintaining law & order.
5. **Hiring & Recruitment** - Some government agencies are using social media hiring channels for attracting best-in-class talent for their job vacancies. "LinkedIn" is a popular online recruitment platform which offers two advantages—it is a publishing tool for job postings, and it also has over 500 million registered users across the world (including 62 million Indian users). They can readily view these vacancies and apply if interested.
6. **Foreign Relations** - Governments are using social media channels effectively to engage with their foreign counterparts. E.g. - Indian Government (through their official Twitter account) wishing the people of Paraguay on their Independence Day
7. **Business & Industry Relations** - Businesses play a key role in driving social media's impact by contributing significantly to the **internet economy via advertising, paid services etc.** Many

monetisation models on the internet rely on enterprises, B2B and large corporations with large advertising and marketing budgets, which contributes to the nation's economy.

8. **Live Traffic Updates** - Real time traffic updates and advisories get regularly shared in the metropolitan cities via the local Traffic Police social media accounts. These updates are helpful to commuters in avoiding traffic jams or taking detours to save time.
9. **Government Procurement** - With the advent of e-tendering, notices related to procurements are increasingly getting posted on social media channels as well.
10. **Crowdsourcing Ideas & Innovation** – Through crowdsourcing, one **gets to tap into the collective “wisdom of the crowds”**. For example, Indian Government's community participation platform MyGov often leverages crowdsourcing. Recently, it hosted a **“Logo Design Competition”** for an upcoming government Heritage complex.
11. **Citizen Service-Delivery Apps** - Social media is a key channel to drive awareness about various service delivery apps launched by the government. For example - **DigiLocker** is meant for digitised documents & certificates, while **UMANG** is like a gateway (or a directory) to multiple government services.
12. **Transparency & Accountability** - Citizens want ready access to departments government and its functioning officers. The police department in Dima Hasao, one of the districts in Assam, has **publicly shared telephone numbers of their top officers and their rank and file**. Such measures promote **transparency and accountability** in the eyes of the citizens.

Digital Platforms

During COVID-19 pandemic, Indian government used digital technology for providing timely information, direct money transfer to the poor etc.

Various Digital Platforms Which Were Helpful

1. Aarogya Setu App

- The App enables people to assess themselves the risk for their catching the coronavirus infection.
- It calculates this based on people's interaction with others, using cutting-edge bluetooth technology, algorithms and artificial intelligence.
- The App's design ensures privacy. The **personal data, collected** by the App, is **encrypted** using state-of-the-art technology and stays secure on the phone till it is needed for facilitating medical intervention and is available in 11 languages.

2. Chatbot

- Gol has launched a **WhatsApp chatbot** so that the citizens can get instant and authentic answers to all of their queries related to the Coronavirus pandemic.

3. Corona Kavach

- It is a COVID-19 tracker application, created by the **Ministry of Electronics and Information Technology** in collaboration with the **Ministry of Health and Family Welfare**.
- This application provides users with **real-time location of infected users** who have activated the 'Kavach' feature.

4. COVID-19 Feedback

- It has been developed by the centre to **get direct feedback from people** who have undergone coronavirus treatment in the country.

5. SAMPRAC

- DRDO has developed an app called **'SAMPRAC'** to enable tracking people under quarantine. The system enables geofencing, AI-based automated face recognition.
- It has the capability to display the information to the state officials on a map which can be **colour-coded to depict hotspots** and **containment zones**.
- It is expected to **drastically reduce the overhead of tracking** every patient under home isolation, thereby reducing the load on the state machinery.
- The violators would be **shown in red** on a map if they break the geo-fence or their selfie(s) does not match; **in blue** if their smartphones stop sending periodic updates; and **in green** if everything is found satisfactory.

6. Direct Benefit Transfer (DBT)

- Launched to transfer the benefits and subsidies of various social welfare schemes.
- It has been **crucial in implementing PM Garib Kalyan Yojana** that was rolled out to provide relief to the poor and vulnerable amid the COVID-19 crisis.

7. SAHYOG

- The Survey of India has developed an **e-platform that collects geotagged information on the nation's critical infrastructure**.
- This will help the government and public health agencies to take critical decisions in response to the current COVID-19 pandemic situation.
- It works as a key tool in helping community workers carry out the government's objectives of door-to-door surveys, contact tracing, deliveries of essentials items and to create focused public awareness campaigns.
- It improves government's response time, strengthens the public health delivery system and subsequently provides the necessary geospatial information.

Some Other Apps which played an important role during COVID-19**A. Bhim(Bharat Interface developed for Money) App**

- Developed by **National Payments Corporation of India (NPCI)**, based on the Unified Payments Interface (UPI). It facilitates **e-payments directly** through banks as a drive towards cashless transactions.

B. RuPay

- A card scheme, conceived and launched by the NPCI to fulfil the RBI's vision to have a domestic, open and multilateral system of payments.

C. GeM (Government e-Marketplace)

- An **e-commerce portal**, which has been created to allow government departments to buy their requirements from various vendors without cash or physical payments.

D. UMANG App (Unified Mobile Application for New-age Governance)

- It is all-in-one single unified, secure, multi-channel, multi-platform, multi-lingual service freeware mobile app for accessing over 1,200 central and state government services in multiple Indian languages.

E. SWAYAM

- Online education programme initiated by Gol to achieve the principles of education policy by providing access, equity and quality. The objective of this effort is to **take the best teaching learning resources** to all, including the most disadvantaged.
- **SWAYAM (Study Webs of Active-Learning for Young Aspiring Minds)** seeks to bridge the digital divide for students who have hitherto remained untouched by the digital revolution.
- It is done through a platform that facilitates hosting of all the courses, taught in classrooms from Class 9 till postgraduation to be accessed by anyone, anywhere at any time.

Localisation Through AI

- Artificial intelligence has started to change the very face of local language technologies, products, tools, services and features. Virtual assistants now understand verbal commands given in Hindi.
- These revolutionary developments in local language technologies are leading to a phenomenon called **Localisation through AI**.
- IT organisations are now leveraging the power of artificial intelligence to enrich their products in order to make them more accessible to local language users.

Benefits of Localisation Through AI

- Localisation through AI helps in increasing productivity of people and **empowers typical language user**. He/she does not need to learn another language to interact with people unfamiliar with their languages. I.e. it **breaks the language barrier** through language translation.
- It fulfils broader perspective of **digital inclusion**. Virtual assistants such as Google Assistant and Amazon Alexa now understand verbal commands given in Hindi.
- Microsoft Translator app on Android and iOS can **recognise and translate content from typed or printed text, spoken word and even from photos**. This will **empower tourists** visiting a foreign country.
- **Narrator, the screen reader from Microsoft**, speaking Hindi is not just an important development from the local language perspective but it will also **empower divyangs**.
- From our actions on keyboard of the phone, it can predict the next word we are about to type. It can **save our effort of typing a few hundred characters** every day.

Demand for local language products and services

- The recently released data of Census of India 2011 indicates a **robust growth in the number of people speaking local languages**.
- Rise in these numbers coupled with increased technological awareness, expectations and a higher per capita income are expected to encourage a greater demand.

Efforts to Promote Localisation Through AI

- Microsoft has been working with Indian languages for over two decades since the launch of **Project Bhasha in 1998**, allowing users to input localised text easily using the Indian Language Input tool.
- The company has recently made available the **Microsoft Indian language Speech Corpus**, offering speech training and test data for Telugu, Tamil and Gujarati.
- Through its **global Local Language Program (LLP)**, it provides people access to technology in their native language.
- This includes **Language Interface Packs for Indian languages** like Hindi, Kannada, Bengali, Malayalam, amongst others.

- The Importance of Real-Time Monitoring (RTM) has increased due to the ubiquitous penetration of mobile phones into global audiences.
- RTM can **overcome mobility and physical connectivity** challenges and **ensure diffusion of knowledge**.

Programmes Embracing RTM

- Development programmes are actively embracing RTM approaches across a range of sectors; from **maternal health to nutrition and water, sanitation and hygiene (WASH)** to improve planning, monitoring, and decision-making efforts.
- During this COVID-19 response, it has become an even greater priority to invest in RTM models that adhere to physical distancing protocols.
- The **Ministry of Health's National Health Portal** has shortlisted a whopping 72 monitoring platforms that have been **authorised to track indicators from health records** in hospitals to mapping water supply sources.

Benefits of RTM integration to Development Programmes

- Provide a monitoring platform for communities and governments to track progress towards shared goals
- Identify supply, demand and bottlenecks in service delivery chains
- Increase accountability of Govt.
- Improved service delivery to hard to-reach communities
- Assess and educate consumers and beneficiaries

Caution:

- RTM approaches are only effective where the capacity to **utilise frequent data and insights is sufficient and responsive**.
- Otherwise, the approach may have a negative effect of creating extra data collection burden without commensurate response.

RapidPro: RTM System by UNICEF

UNICEF's RapidPro collects data via SMS and other communication channels to **enable real-time data collection** and **mass communication** with target end-users, including beneficiaries and front-line workers.

Integration of RapidPro into Various Countries' Programmes

(I) Water, Sanitation and Hygiene Status in Rural India

- In 2019, RapidPro was piloted in two of India's most populous states, **Uttar Pradesh and Bihar**.
- These states carried almost **30 per cent burden of open defecation** globally at the start of SBM, to assess the status of sanitation services and related knowledge.
- This allowed the governments to not only appreciate the tool for its flexibility and scaled reached, but also to receive rapid inputs to questions they were interested in.

(II) U-Report: A Global Tool

- It is a free messaging tool built using RapidPro in 2011.

- Its objective is to **encourage participation of youth**. It has been used for assessing knowledge, practices and attitudes around COVID-19 across 43 countries.

(III) Real-time Monitoring of Social Cash Transfer Programme in Nepal

- UNICEF Nepal supports the Government of Nepal in monitoring social cash transfers disbursed in 'child grant' expansion districts, through RapidPro.

Lessons Learnt:

- Flexible real-time monitoring options (such as RapidPro) are important for development. It ensures that the **data is being analysed** in accordance to the objectives defined **without integrity loss due to human error** and **physical bulk issues** such as paper-based collection.
- Integration **requires time, capacity building and buy-in from multiple stakeholders** with various perspectives.
- It is **important to keep equity in mind**, especially when seeking to include the most marginalised and vulnerable.
- Implementers should realise that RTM platforms are not the end of all information and require scrutiny at all steps to ensure that the right respondents are being included.
- Another key **population to keep in mind is women**, who customarily have lesser access to digital communication options

Covid-19 Virology

- SARS-CoV-2 and other CoVs belong to **subfamily Coronavirinae** in the **virus family Coronaviridae** comprising **four genera Alphacoronavirus, Betacoronavirus, Gammacoronavirus and Deltacoronavirus**.
- These are enveloped with positive sense single-stranded ribonucleic acid (RNA).

Characteristics

- Coronaviruses have **characteristic club-shaped peplomers** projecting out of the virus envelope.
- CoVs are known to **infect different animal species** and can **cross species' barriers** to cause illness in humans.
- The beta coronavirus strains MERS-CoV, SARS-CoV and SARS-CoV-2, all can cause severe respiratory distress with mortality up to the tune of 34.4%, 9.19% and 6.8% respectively, though there may be regional differences.

Structure and Nature of SARS-CoV-2

- The virus has a diameter of approximately 50–200 nm and possesses spikes on its surface that provide it the crown-like appearance.
- The virus is sensitive to ultraviolet rays and heat. Furthermore, these viruses can be effectively inactivated by lipid solvents such as ether, ethanol, disinfectants, chlorine-containing and chloroform.
- Genomic analyses thus suggested that SARS-CoV-2 probably **evolved from a strain found in bats**.
- The potential amplifying mammalian host, **intermediate between bats and humans**, that could have directly triggered virulence towards humans, is yet to be identified.

Transmission

- Animal-to-human transmission was assumed to be the main mechanism of transmission initially.

- Later, it was concluded that the virus could also be transmitted from human-to-human.
- The transmission occurs **primarily through respiratory droplets** from coughing and sneezing, but it can also occur through contact with contaminated surfaces.
- **Aerosol transmission** is also possible in case of protracted exposure to elevated aerosol concentrations in closed spaces. The possibility of **faecal–oral transmission of SARSCoV-2 also cannot be ruled out**, though more evidence is needed.
- **Incubation periods for SARSCoV-2** may vary but have been known to be generally within 3 to 7 days with the median observed to be 5.1 days.
- Children population seems to be the least affected by the disease, while the highest **rate of death is among the elderly** and people with comorbidities.

Clinical Features and Progress of Disease

- Symptoms and signs of COVID-19 may appear 2 to 14 days after exposure and can most commonly include fever, dry cough fatigue, generalised body ache, nausea, vomiting diarrhoea and shortness of breath.
- Most infected individuals may be asymptomatic while some may present with acute respiratory distress syndrome.

Conclusion

- The SARS-Cov-2 pandemic has no doubt posed a significant challenge globally on the public health system.
- An understanding of the **spill over from bats to humans** possibly **as a result of shifts in their ecology and behaviour**, with evidence suggesting that altered roosting habitats, diet, and movement behaviours are increasing.
- We need to review the **ways that changing resource landscapes** (urban and agricultural habitats) affect the processes that culminate in cross species transmission of viruses.
- Towards this end, the **role played by deforestation, increased contact with wild life**, food habits, population density, climate change and increased globalisation in the emergence of such a pandemic need to be recognised.

Migration & Economic Growth

- Nationwide lockdown affected migrant workers who provide support services to every sector and across the classes. Their savings had dried out as they supported themselves without jobs.
- Though the government, by declaring it as a national disaster, had made it **obligatory for the employers to pay the wages**, as per the National Disaster Management Act, it is difficult to assess its implementation.

Why Implementation Is Difficult?

- The administrative machinery to ensure compliance across the nation is far from adequate.
- The income earned by the self-employed workers **cannot be termed as wages**, which means that these workers would have to go without earnings when there is no work.
- **Those engaged in piece-rated jobs**, get remuneration depending on the number of pieces made. Since there was no production, employers were not legally bound to pay.
- The MSMEs or tiny enterprises are financially too fragile to release the wages without production.

A Challenge and an Opportunity

- Generally, migration to urban spaces occur when the **expected wage rate in the urban industrial sector is significantly higher** than the present wages in the rural sector.
- The **presence of a kin or a community member** in the urban sector further induces migration. As more and more people migrate, it becomes nearly impossible to track the size of work force in the urban informal sector.
- As workers began returning due to the pandemic, there was an opportunity to **prepare a data base of this labour market**.
- This information is crucial to the **formation of Labour Market Information System**. **Inadequate information** may be a strong impediment in proper utilisation of funds allotted towards social protection of migrant workers.
- Once the lockdown is lifted, there are **chances of a high labour surplus in some states and relative deficits in others**. This issue can be addressed if a proper data regarding number of skilled and unskilled workers is present.
- By further **classifying this pool skill-wise**, it may be possible to bring them together through cooperative forms of organisation.
- States that have **suffered a poor industrial growth** for long and hence have had a high outflow of migrants can now look at return of migrants as a reclaimed human capital.
- There is a possibility of **building clusters of new MSMEs** or units based on co-operatives using the skill and experience of the return-migrants.

Initiation of Social Dialogue

- It is a phenomenal task to 'settle' millions of workers and it requires effective collaboration from many interest groups. This, however, is a great opportunity to **initiate social dialogue**.
- States with a large inflow of return migrants are likely to face a **downward pressure of wages**. An effective social dialogue can ensure that such revisions are acceptable.
- A similar collaboration could bring about significant benefits if deployed in the process of initiation of new economic activities spearheaded by the return-migrants.
- Permission to utilise the CSR funds could go a long way in promoting entrepreneurial development.

What Might Happen In Future?

- It is assumed that the urban labour market would roll out better terms of employment in the times to come, restarting the process of migration, with more decent working and living conditions.
- Alternatively, there might be a **Ricardo Effect**. Employers **may opt for labour saving technology** in response to an upward movement in the wage rate, triggered by a relative labour shortage.

Way Forward

- Boosting the consumption demand at the earliest is the need of the hour, since consumption expenditure constitutes almost 60 per cent of India's GDP.
- **Ensuring decent earnings to the workers** in general, including the migrants, can easily facilitate this as they have the high propensity to consume.
- There are successful examples of **migrant workers' co-operatives** that emerged as a response to crisis in many countries. States can benefit by **collaborating with ILO**.

- Besides creating gainful employment, States may have to work on improving infrastructure, building industrial estates, for setting up new MSMEs, etc.

Conclusion:

- **'Unlimited supply of labour'** in LDCs acts as a **'potential source of saving'**, provided there was migration of the disguisedly unemployed workers from rural to the urban industrial sector.
- We are now witnessing times when the **'return-migrants'** can become a **renewed source of economic growth** by planting the seeds of their on-the-job skills learnt in the urban sector into their home states.

Online Learning in Lockdown

- Due to COVID-19, millions of students have been driven out of university campuses and the faculty is confined to their homes.
- This has forced the teaching community to look for alternatives to maintain the continuity in the teaching learning process. Online platforms provide such alternative.

History of Satellite Education in India

- **Satellite Instructional Television Experiment (SITE)** was the largest communication experiment in the use of satellite in support of developmental and educational programmes in modern times.
- The telecast via this satellite began in India from August 1, 1975. The instructional objectives of SITE were in the fields of education, agriculture, health and family planning and national integration.
- **Indian National Satellite (INSAT)** was launched in 1977. The major objectives of INSAT were to produce and transmit varied programmes designed to inform, educate, entertain and enrich all sections of the people.
- **Gyan Darshan (GD)** came into existence in January 2000. It is an exclusive and dedicated twenty-four hour educational and developmental TV channel of India.
- Gyan Darshan has become completely digital in the span of fourth year on January 26, 2004. The **primary target audiences** of the channel are **the students studying in undergraduate and postgraduate classes** in universities and colleges.
- On September 20, 2004, **EDUSAT the dedicated satellite for education** in India was launched by ISRO. It is the first Indian satellite exclusively built for the use of education sector.

Statistics Highlighting Digital Penetration in India

- As per one Report, India is the **second-largest internet user** in the world. However, as per the report of TRAI, only 34 per cent of the total population had access to the Internet in 2017.
- The figure carries a vast **gender disparity**, where the ratio of male and female users is approx. 70 per cent and 30 per cent respectively.
- **Rural-Urban Divide:** Rural India accounts for just 25.3 per cent internet density compared to the 34 per cent of the urban population having around 98 per cent internet connectivity.

Alternative to Online Education

- One alternative to online education may be the **delivery of education via television**.

- Also, the judicious mix of Open Educational Resources (OER) along with delivery of education via television/satellite should be explored as an option. The **2012 OER Paris Deceleration** provided the broader guidelines on how to make best use of OER.
- The possibilities of replacement of books with e-content & e-book cannot be ruled out. In such a scenario, the days ahead are for the **Open and Distance Learning institutions and dual mode universities** besides for some of the new institutions.

Challenges

- Providing equity in **access of bandwidth and technology** for remote learners
- Adequate numbers of trained manpower (both the content & technical experts).
- The attitude of both the facilitators & students as well as awareness of parents

Conclusion:

The challenges of the lockdown may become a blessing in disguise in accessing the potential and the capabilities of our institutions in responding to the future necessity of online learning.

eNAM: Platform for Marketing

- National Agriculture Market (eNAM) networks the existing APMC mandis to create a unified national market for agricultural commodities.
- Its vision is to promote **uniformity** in agriculture marketing by **streamlining of procedures** across the integrated markets, **removing information asymmetry** between buyers and sellers and **promoting real time price discovery** based on actual demand and supply.
- Created to fulfil the **vision of One Nation One Market**, eNAM facilitates trade beyond mandi/ state borders.
- **Small Farmers Agribusiness Consortium (SFAC)** is the lead agency for implementing eNAM under the aegis of Ministry of Agriculture and Farmers' Welfare.

Kisan Sabha App: Connecting Farmers to Supply Chain

- Kisan Sabha App has been **developed by CSIR Central Road Research Institute (CSIR-CRRI)**, to connect farmers to supply chain and freight transportation management system.
- The portal acts as a **single stop for every entity related to agriculture**, be they a farmer who needs better price for the crops or mandi dealer who wants to connect to more farmers or truckers who invariably go empty from the mandis.
- It would also prove to be useful for those associated with cold store(s) or godown(s).
- Kisan Sabha also provides a platform for people who want to **buy directly** from the farmers.
- It aims to provide the most economical and timely logistics support to the farmers and to increase their profit margins by minimizing interference of middlemen and directly connecting with the institutional buyers.

MSME Champions

- CHAMPIONS stands for **C**reation and **H**armonious Application of **M**odern **P**rocesses for **I**ncreasing the **O**utput and **N**ational **S**trength

- Launched by **Ministry of MSME** as a technology-driven Control Room-Cum-Management Information System.
- It is aimed at assisting Indian MSMEs march into big league as National and Global Champions.
- The portal is basically for making the smaller units big by solving their grievances, encouraging, supporting, helping and handholding.
- As part of the system a network of control rooms is created in a **Hub & Spoke Model**. The Hub is situated in New Delhi in the of MSME Secretary. The spokes will be in the States in various offices and institutions of Ministry.

Fighting COVID-19 Through Innovation

- DRDO has developed an *automated contactless UVC sanitisation cabinet*, called **Defence Research Ultraviolet Sanitiser (DRUVS)**.
- It has been designed to sanitise mobile phones, tablets, laptops, currency notes, cheque leaves, challans, passbooks, paper, envelopes, etc.
- It also developed an *automated UVC currency sanitising device*, called **NOTESCLEAN**.
- DRDO has also developed an **Ultra Violet Disinfection Tower** for rapid and chemical free disinfection of high infection prone areas. It is named as UV Blaster. The UV Blaster is **useful for high tech surfaces like electronic equipment**, computers and other gadgets in laboratories and offices that are not suitable for disinfection with chemical methods.

S&T Based Innovative Solutions

- The National Innovation Foundation – India (NIF), an autonomous body of DST, has identified several **S&T based innovative solutions through the Challenge COVID-19 Competition**.
- NIF is providing incubation and mentoring support for further dissemination to the generator of the ideas.
- **Shri Mupparapu Raju** from Warangal, Telangana, has designed **the foot-operated device for hand sanitisation and washing**, which is a timely solution in response to need for contactless devices.
- The other supported innovation is an **innovative sprayer capable of sanitising or washing large areas** like roads, societies, doors, compounds, walls, etc.

GOAL Programme for Tribal Youth

- The **GOAL (Going Online As Leaders)** programme of the **Ministry of Tribal Affairs (MoTA)** has been launched in **partnership with Facebook**.
- The programme will provide mentorship to tribal youths through digital mode.
- It intends to upskill and empower 5,000 tribal youths in the current phase to harness the full potential of digital platforms and tools to learn new ways of doing business.
- The program will focus on **three core areas** – Digital Literacy, Life Skills and Leadership & Entrepreneurship, and on **sectors such as** Agriculture, Art & Culture, Handicrafts & Textiles, Health, Nutrition, among others.

- At least 250 Fellows who are getting scholarship from Ministry of Tribal Affairs under National Scholarship and Fellowship Scheme and are part of Tribal Talent Pool will also be mentored through the program.

Swasth Vayu

- A **Non-Invasive BiPAP Ventilator**, has been developed by CSIR-National Aerospace Laboratories (NAL) Bangalore.
- It is simple to use without any specialised nursing, cost effective, compact and configured with majority of indigenous components.
- Non-invasive Ventilator with externally connected Oxygen concentrator will be ideal to **treat moderate or mid-stage severe COVID-19 patients** who do not require intubation and invasive ventilation.

Tropical Cyclones Nomenclature

- Each year, tropical cyclones **receive names in alphabetical order**. Women and men's names are alternated.
- The name list is **proposed** by the National Meteorological and Hydrological Services of WMO Members of a specific region, and **approved by the respective tropical cyclone regional bodies** at their annual/ bi-annual sessions.
- There is a strict procedure to determine a list of tropical cyclone names in an ocean basin by the **Tropical Cyclone Regional Body** responsible for that basin at its annual/biennial meeting.
- There are **five tropical cyclone regional bodies**, i.e. ESCAP/WMO Typhoon Committee, WMO/ESCAP Panel on Tropical Cyclones, RA I Tropical Cyclone Committee, RA IV Hurricane Committee, and RA V Tropical Cyclone Committee.
- For instance, Hurricane Committee determines a pre-designated list of hurricane names for six years separately at its annual session.
- In some of the regions, the lists are **established by alphabetical order of the names**. In other regions, the lists are **established following the alphabetical order of the country** names.
- In general, **tropical cyclones are named according to the rules at a regional level**.
- World Meteorological Organization **maintains rotating lists of names** which are appropriate for each Tropical Cyclone basin. If a cyclone is particularly deadly or costly, then its name is retired and replaced by another one.
- It is important to note that tropical cyclones/ hurricanes/typhoons are **not named after any particular person**. The tropical cyclone/hurricane/typhoon names selected are those that are familiar to the people in each region.