



Concept Note

Digitalization-A New Wave of Technological Change

Technological innovation has been a major force behind economic transformation at different stages of human civilizations. From invention of steam engines to high-speed computers the role and contribution of technologies remained crucial. Historically, countries that have invested in research & development in science, technology and innovation (STI) have maintained an edge over others in advancing application of technologies in manufacturing and augmenting the contribution of frontier areas of technology to the process of economic growth and development. Spread of telecommunications, digital infrastructure and modern information technologies such as Artificial Intelligence, Block Chain, Machine Learning, Deep Learning, Big Data, etc have significantly reduced human effort in production and contributed to higher productivity of labor. It simultaneously marked a steady acquisition of higher technical and managerial skills by the existing workforce which can be broadly defined as adaptation and investment in formal education and training for acquisition of new skills for fresh supply of talents in line the emerging skill requirements. Following that trend, the world has reached a stage now where human labour is being substituted by robots on the grounds of speed and efficiency.

The explosion in innovations in digital technologies in the form of artificial intelligence (AI), Internet of Things (IoT), Big Data, Block Chain, etc. is expected to provide impetus to the Fourth Industrial Revolution. The intensity of competition in the digital technology space has led to increased adoption of automation, robotics and advanced forms of IT applications in various sectors of economy- agriculture, manufacturing and services. In this phase of New Industrial Revolution, the demand for skilling has become universal, irrespective of the skill gaps existing between the developing and developed world. While the developed world is

looking for skills in creating disruptive technologies given their existing advantage in parameters related to skilling, the developing world faces a double challenge of not only bridging an existing gap but also of acquiring skills in contributing to IoT, Artificial Intelligence, robotics and biotechnology. Given the relatively larger gap accruing to some of the developing countries through the process of globalization, a skilling process that enhances the competitive advantage of the Southern nations, in some select sectors, can play the role of a game-changer. By enabling handling of large amount of data and faster process innovations industrial sectors are witnessing profound changes in the concept, design and development of products, marketing, logistics and supply chains, distribution efficiency and most importantly, efficient pooling of skills.

In view of this rapid digital transformation, it is critical to seize the opportunities being unleashed due to the Industry 4.0 focus. Moreover, some regions of the world such as Sub-Saharan Africa and South Asia are experiencing pre-mature deindustrialization and stagnation in manufacturing growth which question how the digital technologies lift those economies and help achieve the Fourth Industrial revolution. At the same time, increased use of IoT, AI, Big Data and other digital technologies would not only replace human labour but also would make certain tasks/skills irrelevant and redundant. There is inherent fear that these technologies are skill-biased technological changes that mainly favours workforce with higher skills. Developing countries are likely to lose a lot of middle-skill jobs and get trapped in low-skill less remunerative job categories. As per an estimate by OECD, the orders of industrial robots have increased threefold in just over a decade and are projected to double by 2020. Unless existing workforce is trained with new skills and capabilities there would be underemployment and perpetuation of unemployment problems in populous countries like India and China.

All countries in the Asian region are badly affected, and the industrial recovery in the post-pandemic period would take a tough course in the next few years as normalcy in sales, capital expenditure, product and process innovations and mitigating adverse impacts on trade is unlikely to be smooth. Countries would rely on domestic demand to initiate the first phase of recovery. Although the signs of vaccine development reaching final stages of approval are already visible now, it would take time to restore normal pattern of production, consumption and trade. In that sense, the post-Covid industrialisation may not look like the usual path as experienced in the pre-pandemic years. There is a need to brainstorm on the path to industrial recovery and leverage the competitive edge of the Asian region in global industrial landscape.

Major Themes

The scope of application of digital technologies is growing across the sectors. While the potential for digital economy is immense the frontiers of applications of digitalisation in other related fields like governance, education, health, financial services and women empowerment are expanding. Health that assumed extraordinary attention during Covid-19 is undergoing transitions as digital technologies have opened up avenues for innovations in diagnostics and treatment.

In that perspective, the conference has identified two broad themes for brainstorming in two different technical sessions. The first session covers the wider scope of digital transformation and the sectors that need specific attention. Some of the important sectors include digital

education, digital infrastructure, fintech and financial inclusion, digital governance. This session aims to identify the trends in digital applications and the possible ways different sectors can benefit from the emerging technological possibilities. In addition, the session is expected to cover the policy and regulatory issues that need to be addressed. The second technical session focuses exclusively on digital health. As mentioned above, countries are facing the threats of new diseases and pandemics like Covid-19. Digital technologies could help countries working together with advanced applications in medical diagnostics, pooling scientific data and best practices, integrating health systems, and making health services accessible and affordable to the ordinary people in the countries. Although global issues are likely to be discussed broadly, the sessions aim to cover issues specific to Asia in greater detail.

Broadly, the sessions may cover the following questions across the sectors:

- How the digital technologies change the nature of industrial production and revive the stagnant manufacturing sectors in the post-Covid period?
- Are the new digital technologies exclusive domain knowledge of the advanced economies which would make the developing countries and small economies to depend on the existing forms of technology transfer?
- As a uniform technology ladder is unlikely for all the developing countries given their resources and skill base, what types of technology regime to be visualised for the countries especially the allocation of financial resources, public policy on science and technology, role of private sector, etc?
- How the SMEs can benefit from the above mentioned digital technologies?
- Are the existing skilling mechanisms relevant and effective? What are the lessons learnt? What are the different pathways to industrialisation and employment for countries at different stages of development?
- How can the gap between demand for and supply of skills be reduced for stimulating investments in manufacturing, especially in the age of automation and robotics?
- How to work towards evolving international institutions of higher learning to deal with advanced technologies in the developing countries?

Outcome and Dissemination

The conference organisers would circulate the key findings of the conference and policy recommendations to relevant ministries in the Government of India and institutions in Asia including ERIA for wider dissemination. In addition, necessary follow-up studies would be taken up to enable deeper and comprehensive analysis of specific sectoral issues in the realm of digitalisation and its inter-linkages with the development process.