

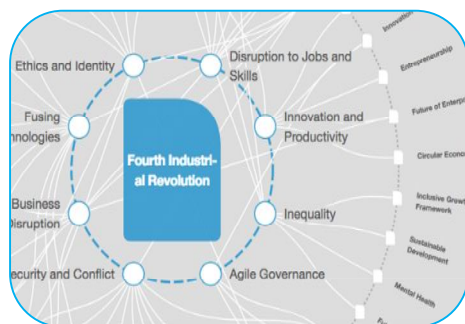


ISSN: 2249-894X

IMPACT FACTOR : 5.7631 (UIF)

UGC APPROVED JOURNAL NO. 48514

VOLUME - 8 | ISSUE - 8 | MAY - 2019



## POLICY THINK TANKS FOR TECHNOLOGY AFFAIRS IN THE CONTEXT OF FOURTH INDUSTRIAL REVOLUTION IN INDIA: REASONS AND OPPORTUNITIES

**Dr. Aseel Abdul Wahid**

Assistant Professor, Farook Training College, Calicut, Kerala.

### ABSTRACT:

*As the world advances to a forth industrial revolution, India has a unique opportunity to be the "potential workforce for the globe". However this becomes a momentous responsibility too due to India's growing need for employment in millions in the coming decade. Analyzing the past industrial revolutions, this paper explores the pattern in leadership initiatives who took lead roles in each of these revolutions. Taking insights from this pattern, this exploration proposes the importance of a technology based policy think tank in India that can fundamentally support the nation to assume*

*leadership role in the industrial revolution 4.0.*

**KEYWORDS:** Technology Affairs, Fourth Industrial Revolution.

### INTRODUCTION

Every new age is a product of a revolutionary change. The modern age is the result of industrial revolutions driven by tremendous change in technology, society and the economy. Now we are advancing in to the fourth industrial revolution. The First Industrial Revolution used water and steam power to mechanize production. The Second used electric power to create mass production. The Third used electronics and information technology to automate production. Now a Fourth Industrial Revolution is building on the Third, the digital revolution that has been

the last century. It is characterized by a fusion of technologies that is blurring the lines between the physical, digital, and biological spheres.

It is quite an evident pattern that the technological changes triggered the industrial revolutions that in result changed the society and economy. The history unfolds that industrial revolutions gave birth to notable international organizations that played a major role in policy making and global governance; the Vienna Congress in 1815 after the first industrial revolution, the Hague Conference in 1899 after the second industrial revolution, European Management Forum in 1971 after the third industrial revolution.

International organisation as process has always existed since the

international system after the Westphalia Treaty of 1648. But these processes did not yield to an international organisation as institution until the time that the states faced great problems and realised that they had to create some permanent institution to deal with these problems. The first international organization as an institution started to emerge after first industrial revolution in Europe. But the Congress of Vienna was actually oriented to the political and security order in Europe. The Congress itself introduced some novel techniques and habits for the later international organizations. The most important novelty was the agreement by the great powers to make regular consultations on the issues of war and peace in Europe at "fixed intervals. So there developed a

occurring since the middle of | emergence of the modern | habit that the states would convene conferences at peace time regularly to discuss the war-peace problems, and try to find political, legal solutions for these problems (Esen Ermis, 2015 - Political Consultant, Turkish Parliament).

In the Fourth Industrial Revolution technology is disrupting every domain like never before. Professor Schwab Klaus (Founder and Executive Chairman, World Economic Forum) associated it with the "Second Machine Age" in agreement to the arguments put forth by MIT Professors Erik Brynjolfsson and Andrew McAfee. Digital technologies [...] are not new, but in a break with the third industrial revolution, they are becoming more sophisticated and integrated and are, as a result, transforming societies and the global economy. This is the reason why these MIT professors have famously referred to this period as 'the second machine age'. By the words of Prof. Schwab Klaus, The Fourth Industrial Revolution, 2016 says "We stand on the brink of a technological revolution that will fundamentally alter the way we live, work, and relate to one another. In its scale, scope, and complexity, the transformation will be unlike anything humankind has experienced before. We do not yet know just how it will unfold, but one thing is clear: the response to it must be integrated and comprehensive, involving all stakeholders of the global polity, from the public and private sectors to academia and civil society..."

There are three reasons why today's transformations represent not merely a prolongation of the Third Industrial Revolution but rather the arrival of a Fourth and distinct one: velocity, scope, and systems impact. The speed of current breakthroughs has no historical precedent. When compared with previous industrial revolutions, the Fourth is evolving at an exponential rather than a linear pace. Moreover, it is disrupting almost every industry in every country. And the breadth and depth of these changes herald the transformation of entire systems of production, management, and governance (Prof. Schwab Klaus, The Fourth Industrial Revolution: what it means, how to respond, World Economic Forum's Global Agenda).

Now if we look at the international bodies evolved during the industrial revolutions or the "First Machine Age" it is evident that these entities were formed to address the effect of the phenomenon by making social and economic policies through collective decision making (See the table below). However no major international body for policy making has evolved to address the cause of the industrial revolutions due to various reasons. This demands the need of a global platform for policy dialogues exclusively for technology affairs.

Industrial Revolution	Year	Based on	Technology	Major Summits	Year	Outcomes
1.0	1784	Mechanical production equipment driven by water and steam power	Water and Steam Power	Congress of Vienna	1815	Nation States
2.0	1870	Mass production enabled by division of labor and the use of electrical energy	Electric Power	First Hague Conference	1899	International Court of Justice and Peace
3.0	1969	Use of electronics and IT to further automate production	Electronics and Information Technology	European Management Symposium	1971	World Economic Forum
4.0	-	Use of cyber physical systems	Artificial Intelligence/ Cognitive	-	-	-

			Technology			
--	--	--	------------	--	--	--

Though certain recent initiatives have been made by notable organizations like World Economic Forum (where they have launched a “Centre for Fourth Industrial Revolution” in San Francisco as a platform for dialogue on the impact of Fourth Industrial Revolution), a concept of this magnitude has not been explored in the technology arena.

### WHAT IS THE SOLUTION FOR THIS?

A global property shall be formed before the onset of Fourth Industrial Revolution to drive the phenomenon in a way that it impacts the human kind in the most positive means. This international policy making body will be exclusively for technology affairs across the globe. Following the evidences from history, the best possible way to initiate this concept would be through a global summit engaging the multi-stakeholder ecosystem of governments, NGOs, business organizations, and youth to create a civil society that will support the governance of this democratic entity. Hence it is here by proposed to conduct a Global Summit on Technology to initiate the launch of the international policy making body for technology affairs.

This international body should be strategically positioned in India because of the following reasons:

#### 1. *India shouldn't miss the Fourth Industrial Revolution*

According to Jayshree Sengupta (Senior Fellow, Observer Research Foundation): ‘The First Industrial Revolution took place in the late eighteenth century after the invention of the steam engine and important inventions in the textile industry in England. It brought about a massive wave of unemployment causing huge social change. It was missed in India because of historical reasons. The Second Industrial Revolution happened on US soil that was ushered in by Henry Ford in the 1920s with his assembly line manufacturing and mass production. This was also missed by India. The Third Industrial Revolution, supposedly taking place in the 1970s, was also not all pervasive in India though it has managed to catch up on IT and digital technology rapidly, especially in large scale production processes in recent times. But we have not gone extensively for the latest technological innovations like 3D printing, a manifestation of the Third Industrial Revolution.

The Fourth Industrial Revolution is possible in India, according to official sources and industrialists like Mukesh Ambani, because of the huge increase in data usage and the Digital India campaign. India is the second biggest user of mobile phones in the world. But it is much more complicated than that and is marked by a fusion of technologies that straddle the physical, digital and biological worlds. The speed of change will be unprecedented and it will lead to transformation of entire systems of production, management and governance.

In India, are we prepared for the Fourth Industrial Revolution, when in fact 90% of the manufacturing units are still working in the informal and small and medium enterprises (MSMEs) which contribute 46% of India's exports and 8% of the GDP? They also contribute to 45% of total industrial employment.

The Commerce Minister has rightly pointed out that the MSME sector is very important and should be focused upon. Many large scale organised sector manufacturing units are using the latest robotics and digitalization and are already heavily into capital intensive production processes, as a result of which India has witnessed jobless growth in the past. But the problem will arise when more and more people are rendered jobless as the latest technology will replace human labour extensively. Where will the displaced labour find jobs? Providing jobs to about One million people entering the labour force is going to be the main problem that India will have to face in the future. The MIT Sloan School of Management economists have already warned that the fourth revolution, using extensive artificial intelligence, will affect India and other developing countries by cutting into their cheap labour advantage. They have also reiterated that inequalities will rise. Increasing inequality is already visible in Digital India and will be accentuated in the future which will increase social tensions. India's large

number of low skilled youth will also face major challenges in big industries as well as MSMEs because product cycles will become very short and this will lead to a lot of uncertainty and unpredictability.

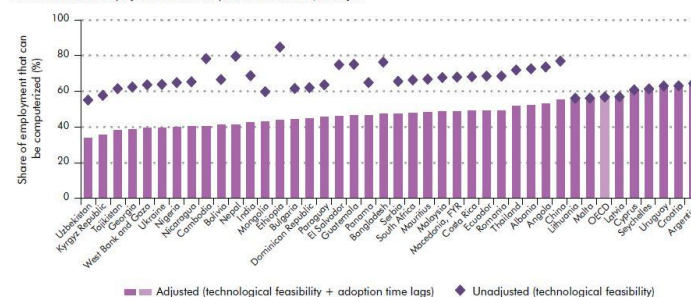
*In Kranti Nation: India and the Fourth Industrial Revolution*, economic analyst Pranjal Sharma gives us 50 examples of the burgeoning Fourth Industrial Revolution from 10 different sectors such as manufacturing, logistics, and services, consumer and retail, transportation and mobility, healthcare and diagnostics, hospitality and travel, banking and finance, agriculture and food, education and training and energy: old and new. Professor Klaus Schwab, executive chairman, and founder, World Economic Forum, notes in his pithy preface to the book that Sharma shows us the three ways in which India is at the forefront of the Fourth Industrial revolution: Indian businesses and industry are demonstrating how global technologies can be tailored to local needs and customs, benefitting Indian citizens and consumers through greater economic opportunities and higher quality goods and services. Indian innovators are creating new products and services with global applicability and scalability. Indian companies and technology leaders are working to ensure that innovative technological solutions generate more than this economic upside—that they are developed in ways to increase inclusion and help address local challenges. Sharma admits that automation and robotics in industrial manufacturing suits countries with low productive populations. But it does not suit countries like India, where 12-13 million people enter the job market every year. And the country is expected to lose 1.5 million jobs annually and one in four such job losses will happen on account of automation.

## 2. India should address the Estimated Unemployment due to Automation

According to World Development Report 2016 by World Bank, it is estimated that the 69% of all jobs in India is susceptible to automation by 2030 (See the figure below).

**Figure 2.24** From a technological standpoint, two-thirds of all jobs are susceptible to automation in the developing world, but the effects are moderated by lower wages and slower technology adoption

Estimated share of employment that is susceptible to automation, latest year



Sources: WDR 2016 team, based on STEP surveys (World Bank, various years); Central Asia World Bank Skills surveys (World Bank, various years); Survey-based Harmonized Indicators Program (SHIP) (World Bank, various years); Socio-Economic Database for Latin America and the Caribbean (SEDLAC) (CEDLAS and the World Bank); South Asia Region MicroDatabase (SARMD) (World Bank, various years); Europe and Central Asia Poverty (ECAPOP) Database (World Bank, various years); East Asia and Pacific Region Poverty (EAPPOP) Database (World Bank, various years); the I2D dataset (International Income Distribution Database) (World Bank, various years); ILO Laborista database (various years); the National Bureau of Statistics of China (various years); Frew and Osborne 2013; Comin and Hobin 2010. Data at <http://bit.do/wdr2016-Fig2> 24.

Note: The unadjusted probabilities of automation for occupation are from Frey and Osborne (2013), weighted by employment. The adjusted probabilities account for the slower pace of technology adoption in poorer countries, using the adoption lag of earlier technologies (Comin and Mestieri 2013). See Monroy-Tabora, Moreno, and Santos, forthcoming, for the WDR 2016. OECD = Organisation for Economic Co-operation and Development.

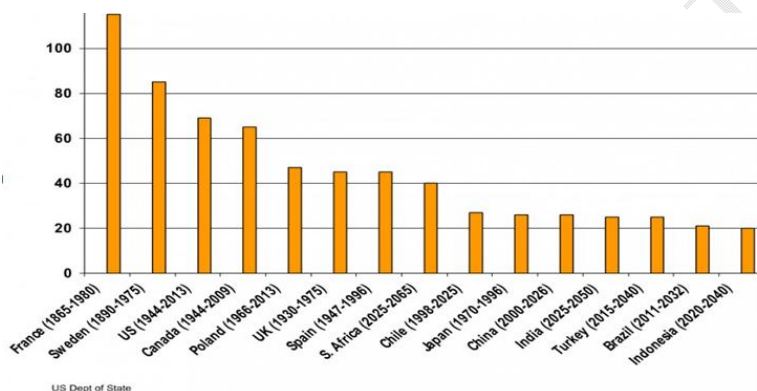
India had a population of 121 crore people in 2011 according to the Census, and is slated to have a population of about 170 crore people in 2047. According to data by the Labour Ministry 10 lakh new people enter the labour market every month. The Asia-Pacific Human Development Report released by the United Nations Development Program (UNDP) shows that between 1991 and 2013, the size of the "working age" population increased by 30 crores. Over the same period India was able to create just 14 crore jobs, which means that less than half the population entering the workforce was able to find employment. This shortage of jobs is slated to get worse as automation, artificial intelligence and other technologies reduce the need for human labour in most industries.

### 3. India is the largest young nation in an aging world



India has a big youth population with about 64.4% of its total population between the ages of 15 and 59 years in 2015, according to data from the sample registration survey of India (SRS) statistical report. Children between the ages of 0 and 14 years made up 27.3% of the population - the future demographic dividend of the country, while 8.3% of the popn were above the age of 60 years. Urban and rural areas had very similar population composition. But youth made up a greater share of the urban population (67.7%) than the rural areas (62.9%).

The graph (US Dept. of State) exhibits the average age of various emerging economies in the first half of the 21<sup>st</sup> century from the available census data. However India's position is clearly indicating a demographic dividend with a young population at an average age between 20-30 up to the 2050 and this becomes more relevant in the context of an aging world. The largest young population hence becomes a valuable asset to the nation and as well the whole civilization. This opportunity exercises an immense responsibility on the agencies that controls and influences the largest potential human resource in the planet.



## CONCLUSION

In the light of above mentioned reasons India should take the lead of the situation for the benefit of the country and for the benefit of the globe.

1. It is clear from the past industrial revolutions that the international bodies and the founding members of these entities in the development stage of the impact period became the front-runners of it.
2. Rather than opportunity it is now the responsibility of the nation to advance into the Fourth Industrial Revolution and to address its impact
3. Being the largest young population in an aging globe this nation is poised to be the potential workforce of the globe. In larger sense addressing this context with immediate attention is a global responsibility too.
4. We should develop an international body for policy dialogues exclusively for technology affairs in the context of fourth industrial revolution

## REFERENCES

1. <https://www.weforum.org/agenda/2016/01/the-fourth-industrial-revolution-what-it-means-and-how-to-respond/>
  2. <https://www.linkedin.com/pulse/international-organizations-3-esen-ermis/>
  3. <https://www.weforum.org/agenda/2016/01/the-fourth-industrial-revolution-what-it-means-and-how-to-respond/>
- <https://www.weforum.org/projects/creating-a-multistakeholder-think-tank>