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CONTENTS

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THE FUTURE OF WORK: ISSUES FOR INDIA

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That the world is changing at a rapid pace is a well-known fact. However, it is nearly impossible to know exactly how the world will be transformed by megatrends that we are witnessing. What we can do, however, is understand the trends and do our best to be prepared for a future that we cannot take for granted. For developing countries like India, the future of work will be very different from Organisation for Economic Cooperation and Development (OECD) countries. These differences will arise not only because technology is adopted and diffused at varying rates but also because of the different rates of demographic transitions in countries. While most of the developed world is ageing and face severe labour shortages, the developing countries are hastily strategizing to make sure their young are gainfully employed thereby contributing to development. There is a need therefore to outline the major challenges for India and recommend some policies for stakeholders such as governments, employers, academic institutions and individuals.

Key Words*:* Future of Work, Labour, ILO, Emerging Economies, Demography, Globalisation.

1. INTRODUCTION

Nothing is constant. Everything changes. The concept of 'work' is in flux and this is causing a fair amount of concern worldwide. The global shift occurring is taking the focus away from employment to work; from jobs to livelihoods. 'Work' in this context is to be seen as beyond 'jobs' and reflects not just an existing reality but the trend of digitization and flexible work opportunities of the future.

The danger of a single narrative is that it leads us to believe that we are bound to one outcome; to one common future. The truth is quite the contrary. Just as globalization has impacted different parts of the world differently, with some reaping its benefits in both the developed and developing parts of the world, the future of work will have a varied impact throughout the world. This impact will be contingent upon the

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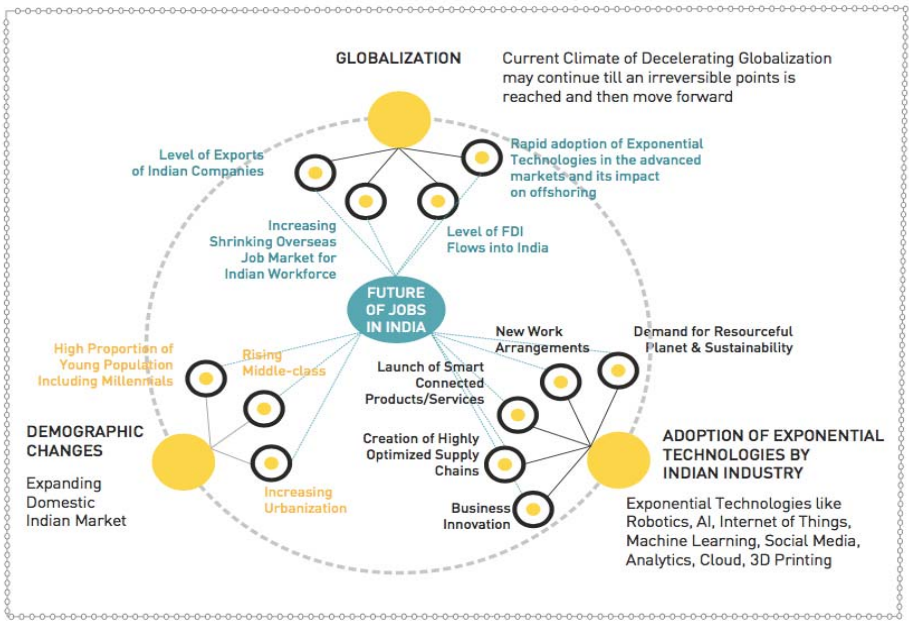
level of development, the demography, climate change and technology. *The world is changing rapidly but unequally.*

The International Labour Organization (ILO) has set up a Global Commission on the Future of Work. The mandate of this Commission is to undertake an in-depth examination of the future of work that can provide the analytical basis for the delivery of social justice in the 21st century. This paper seeks to address this very issue from an Indian perspective and raise issues that policy makers need to concern themselves with.

2. FACTORS IMPACTING CHANGE



Source: NASSCOM, FICCI and EY, 2017.

2.1 Automation/Technological Change

It has been estimated that only 2 per cent to 8 per cent of jobs in developing countries will be impacted by automation in the foreseeable future (World Bank, 2017) and yet technological change has accelerated (119 years for the spindle to diffuse outside of Europe, the internet spread across the globe in only 7 years). According to one report, the scope of technological change is so rapid that more and more

occupations will be affected. The CITI GPS report (2016) claims that on average, 57 per cent of the jobs (on average) in the OECD countries, 69 per cent of jobs in India and 77 per cent of jobs in China will be impacted by automation. Yet another report by a US research firm, HfS, claims that due to a rise in adoption of automation and artificial intelligence, the number of low-skilled workers in the domestic IT and BPO service sectors could fall from 2.4 million in 2016 to 1.7 million in 2022 resulting in 0.7 million workers being displaced. However, the report also predicts that medium and high skilled jobs will see a rise during the said period. Further, following the adoption of automation, the net job loss in Indian IT/BPO sector across skill levels is expected to be around 450,000, from 3.65 million in 2016 to 3.2 million in 2022. The report also noted that following the adoption of automation, globally total jobs in the IT/BPO space are expected to fall by 7.5 per cent with major countries like India, the US and the UK being hit.

And yet, unemployment rates in the developed rate are approaching a 40 year low and is down to 5.5 per cent even the face of the fear of losing jobs to automation and exponential technologies being adopted widely. According to Ruchir Sharma, demographics may have an answer. While Japan is one of the fastest ageing economies, its unemployment is under 3 per cent [migration may also have a role to play here]. It cannot be emphasized enough that language, motor skills, and creativity and not skills possessed by bots. In fact, since 2008, Germany and Japan have witnessed the strongest job growth even though they deploy the most number of robots. The pain, according to Sharma, is a symptom of 'rapid churn', in other words, the old being replaced by the new[1].

2.2 Demography

Undoubtedly, one of the most important factors, if not *the* most important factor in the future of work will be demography and its impact on the workforce. While globally, the countries that have already moved swiftly through the demographic transition at a rapid pace as compared to the developing world have high life expectancies and below-replacement level fertility rates, there are other countries with 'youth bulges' that have come to be known as 'demographic dividends'.

1 https://blogs.timesofindia.indiatimes.com/toi-edit-page/uniquely-indian-problems-why-india-is-now-detached-from-the-world-sitting-out-the-global-recovery-in-growth-and-jobs/ (Accessed on 1st December, 2017).

It is only but once in the development trajectories of countries that there is an opportunity to reap these demographic dividends; by increasing the number of those who are productive to those who are dependent, the economy is supposed to gain from this phase. At the same time, skill gaps and labour shortages abound in countries with a shortage of people in the working age. Therefore, the future of work is bound to be impacted by demographic factors in countries with shortages as well as in those with an excessive supply. It has been estimated, for example, that the health sector is set to create the largest job openings, estimated at more than 4 million jobs in the US from 2012 to 2022.

2.3 Globalisation/Retreat from Globalisation

There is recognised perception today that the world is witnessing a retreat of globalisation and concerted moves towards more nationalist and protectionist positions, globally. While this may find itself articulated in some political positions, the actualities of the global economy make it imperative that any policy formulation must take into account such reality - albeit even for insular policy prescription.

The first question to be addressed is whether we can find local or even national answers or strategies to address the challenges of Industry 4.0. Yes, we probably can, but it may not be optimal or even desirable. In this interconnected world of global supply chains, digital connectivity, emerging disruptive technologies and international standards and skills it is no more possible to be insular and expect local strategies to give expected results. Not only are the differences and aspirations of individual players in the production process blurring but so are capacities and capabilities of technologies and the skills of workers and managers. Is an Uber driver a worker or a professional? Does she offer a service or a skill as part of a supply chain? Is she an entrepreneur using Artificial Intelligence (AI) through her iPhone or just a clog in a radio despatcher's detail? Both she and her vehicle could be replaced by a robot or self-driven contraption controlled through a centralised command centre offering a global solution for mobility. Will that not lead to an entirely different ecosystem that may be physical in its geographical location but one that is interconnected and therefore dependant on technologies and options far beyond any local policy prescription? To address this new milieu, it is but obvious that we

stake out any policy option and technological solution in the context of a shared market economy.

It could this be argued that these nationalistic or protectionist strategies will lead to tweaking of policies for more local content etc. If we take the example of India, in ten years the population dividend should lead to more demand and therefore growth of Indian manufacturing including more MNCs emerging from India.

2.4 Climate Change/Environmental Factors

The other big issue, both global and domestic, will be the move to handling climate change where businesses have to be more sustainable. This will give many emerging economies, including Indian business a competitive advantage. There is a strong business case for both mitigation and adaption and renewables have already emerged as a major business opportunity.

3. IMPACT ON LOW AND MIDDLE-INCOME COUNTRIES (LMICS)

3.1 Manufacturing Led Development

A study of the history of economic development shows that countries modernized and grew their economies by enlarging their 'industrial' or manufacturing sectors, which provided jobs as people moved out of primary agricultural sectors. Manufacturing has traditionally absorbed a substantial part of the economy's low-skilled labour from agriculture at higher levels of productivity (McMillan and Rodrik, 2011). The manufacturing sector was different from other sectors because it absorbed large numbers of relatively unskilled workers at a substantial productivity premium which was underpinned by the sector's tradability in international markets.

Looking ahead, changing technologies and shifting globalization patterns bring manufacturing-led development strategies into questions. The Internet of Things (IOT), advanced robotics and 3-D printing are shifting what makes locations attractive for production and threaten significant disruptions in employment particularly for low-skilled labour. These trends raise fears that manufacturing will no longer offer an accessible pathway for low-income countries to

develop, and even if feasible, that it would no longer provide the same dual benefits of productivity gains and job creation for the unskilled. As a result, the potential risk of growing inequality across and within countries warrants closer attention to the implication of changing technology and globalization patterns.

The development impact of manufacturing comes not only from "Production" per se but also increasingly from services involved in a product's broader value chain. "Manufacturing" increasingly represents the entire value chain of producing goods and services are often embodied in goods - as part of the manufacturing process and more services are being embedded in goods during postproduction (such as aftersales support and add-on services) - a process called the *"servification" of manufacturing*.

The Risk of 'Premature Deindustrialisation'

Manufacturing is becoming less labour-intensive in the emerging and developing world and contributing to a growing concern over 'premature deindustrialisation'. Increased automation in low-wage countries, which have traditionally attracted manufacturing firms, could see them lose their cost advantage and potentially lose their ability of achieving rapid growth by shifting workers to factory jobs. Automation and 3-D printing will encourage companies to move their manufacturing process closer to home-with North America gaining the biggest advantage from this development and China having the most to lose.

Over the course of the 20th century, peak manufacturing employment has declined among emerging economies. Manufacturing processes, also in Low and Middle-Income Countries (LMICs), are more automated than in the past. China has already replaced the US as the largest market for industrial automation. This is indeed part of the country's development strategy. Countries like India that have essentially been slow in getting on to the manufacturing bus are trying to make China's loss their gain through national schemes like 'Make in India'.

Factor Markets

The three traditional factors of production - Land, Labour and Capital are also transforming. In an ideal market economy, these three factor

markets should be similar to commodity markets where buyers and sellers can transact freely. Assuming that land is restricted but available, capital that has expanded exponentially and is used to acquire technologies through Mergers and Acquisitions (M&As) and a labour factor market emerging and maturing in its own way. As an enterprise, then, I employ a worker, but in doing so I actually enhance his/her skills on the job? Skilling within enterprises is the greatest learning experience and in that sense, makes for enterprises being both the buyer and the producer of the labour market in the same production system. Therefore, in the context of the future of work, we need to remember that the future of the 'worker' is integral to the production system.

3.2 The Future of Growth: Innovation and AI

Over the past few decades, land and labour as factors of production have not been able to drive levels of economic growth. In this scenario, Artificial Intelligence (AI) has the potential to become a new factor of production which can transform the basis of economic growth for countries across the globe. For this to happen, one has to see AI as a capital-labour hybrid. The true potential of AI lies in its ability to complement and enhance traditional factors of production.

Research by Accenture (Purdy and Daugherty, 2016) points out that AI as the new factor of production can drive growth in at least three important ways. First, it can create a new virtual workforce—what is called, 'intelligent automation'. Second, AI can complement and enhance the skills and ability of existing workforces and physical capital. Third, like other previous technologies, AI can drive innovations in the economy. Over time, this becomes a catalyst for broad structural transformation as economies using AI not only do things differently, they will also do different things. This research also indicates that AI has the potential to *double annual economic growth rates* in terms of gross value (Ibid).

4. CHALLENGES IN THE INDIAN CONTEXT

4.1 The Unorganised and Informal Sector in India

According to the National Commission on Employment in the Unorganized Sector (NCEUS), India's workforce comprises 474 million individuals, of which 86% work in the informal sector (unincorporated

private enterprises owned by individuals or households operated on a proprietary or partnership basis and with less than 10 workers) and 92.3% work in the informal economy (informal sector plus informal workers (who do not get employee benefits and social security). Therefore, the percentage of informal employment in India is large producing roughly 50 per cent of the GDP and employing 92 per cent of the workforce.

However, it is believed that the number of employees in the formal sector may be underestimated. The official numbers for formal employment in India (up to 2012) are as follows:

Table 1
Formal Employment in Public and Private Sector (in thousands)

Year	People Employed			People Employed in Public Sector			People Employed in Private Sector		
	Total	Male	Female	Total	Male	Female	Total	Male	Female
2009-10	28,708	22,849	5,859	17,862	14,666	3,196	10,846	8,183	2,663
2010-11	28,999	23,045	5,954	17,548	14,377	3,171	11,451	8,669	2,783
2011-12	**29,579**	23,525	6,054	**17,609**	14,457	3,152	**11,970**	9,067	2,903

Source: Centre for Monitoring Indian Economy (CMIE)[2]

Table 2
Ratio of Public and Private Sector Employment in Total Formal Employment

	Ratio of Public Sector Employment in Total Employment	Ratio of Private Sector Employment in Total Employment
2009-10	62.2	37.8
2010-11	60.5	39.5
2011-12	59.5	40.5

Recently, a Taskforce of the NITI Aayog (the government planning and research body), set up in May 2017, has recommended that at least for the purpose of counting, people covered under one of the following be considered as formal workers:

- Workers covered under the Employees' State Insurance Act, 1948

2 https://www.cmie.com

- Workers covered under Employees' Provident Funds and Miscellaneous Provision Act, 1952 (or other similar social security scheme)
- Government and other public-sector employees
- Workers having coverage under private insurance or pension schemes or provident funds.
- Workers subject to tax deduction at source on their income through submission of Form 16 or similar Income Tax form.

"The Task Force is of the view that, in the Indian context, where written contracts are not common and nearly three-fourths of employment is in enterprises with less than ten workers, the definition of a formal worker based on enrolment in provident funds, medical insurance or pension schemes represents a reasonable compromise," said the report.

There are several definitions for who is a 'formal worker' in India and therefore, the Taskforce has suggested the adoption of a new more pragmatic definition of what constitutes 'formal employment'.

4.2 'Jobless Growth': Demographic Disaster in Waiting?

According to credit rating firm CRISIL, around 18 million people enter the workforce every year. The number of jobs created is far lower; between 2011-12 and 2015-16, India created 3.65 million jobs a year. The International Labour Organisation's (ILO) World Employment and Social Outlook 2017 estimates that Indian unemployment rate will remain at 3.4% in 2017-18.

The NITI Aayog, however, has argued that underemployment and not unemployment is India's problem. "Contrary to some assertions that India's growth has been 'jobless', the Employment Unemployment Surveys (EUS) of the National Sample Survey Office (NSSO) have consistently reported low and stable rates of unemployment over more than three decades. "Indeed, unemployment is the lesser of India's problems. The more serious problem, instead, is severe underemployment," the Niti Aayog said in the Three-Year Action Agenda for 2017-18 to 2019-20[3].

The report has stressed on the need to create 'high-productivity, high-wage' jobs. It has recommended the creation of a handful of Coastal

3 http://niti.gov.in/writereaddata/files/coop/IndiaActionPlan.pdf

Employment Zones (CEZ), which may attract multinational firms in labour-intensive sectors from China to India.

It is of the view that, "the presence of these firms will give rise to an ecosystem in which local small and medium firms will also be induced to become highly productive thereby multiplying the number of well-paid jobs". We also recommend that the Micro, Small and Medium Enterprises (MSME) sector should adopt exponential technologies.

4.3 Skills Deficit

On average 1.6 million youth were trained by National Skill Development Corporation (NSDC) annually. The total number of individuals trained is above 13 million till date**.** These trainings are across NSDC fee-based training model, STAR scheme, Pravasi Kaushal Vikas Yojana (PMKVY), UDAAN scheme and other schemes. The table below provides a snapshot of the total number of trained individuals by NSDC.

Table 3
Individuals Trained by NSDC

Schemes/ Projects	Total Candidates Trained								Total (in Lacs)
	FY 10-11	FY 11-12	FY 12-13	FY 13-14	FY 14-15	FY 15-16	FY 16-17	FY 17-18	
NSDC fee based model*	0.2	1.82	4.03	10.8	20.39	17.14	20.15	4.41	78.94
STAR Scheme	-	-	-	-	14.01	-	-	-	14.01
PMKVY	-	-	-	-	-	15.84	6.22	10.16	32.22
Udaan Scheme	-	0.001	0.002	0.02	0.02	0.06	0.1	0.02	0.22
Others**	-	-	-	-	-	2.86	2.52	0.11	5.49
Total for FY (in Lakhs)	0.2	1.82	4.03	10.82	34.42	35.9	28.99	14.7	130.88

Notes: * Includes training conducted by fee based Training Partners, Innovation Partners and assessments by SSCs for non-NSDC Training Providers.

** These include trainings through other central govt. schemes/programs by NSDC TPs and other assessment nos. reported by SSCs outside PMKVY and NSDC fee based model.

Source: SDMS.

The government's *flagship skilling scheme for overseas employment*, the 'Pravasi Kaushal Vikas Yojana' (PKVY) was re-launched in October 2016 with an outlay of 12000 crores and the ambition of training 1 crore people in four years (2016-2020). Placement tracking has been made mandatory since 2016. Latest reports suggest that until July 2017, out of a total of 30.76 lakh individuals who have been trained or are being trained, only 2.9 lakh workers have received placement offers. The reasons for this that have been cited are the lack of training quality and the information asymmetry regarding the demand-supply dynamics. The government has now shifted their focus to inviting more participation from the state and involving the District Collectors to ensure delivery and ensure district level and monitoring of skilling at the ministry level.

From an employers' perspective, finding right people for the right job is becoming an increasingly uphill task. CEOs and HR heads across industries often lament the dearth of leaders, independent thinkers, self-starters, problem solvers or even people with pure common sense in the workforce. This is the dichotomy.

4.4 Youth and Women in the World of Work

Youth Unemployment

"According to the World Bank, over 30% of Indians between the ages of 15 and 29 are NEETs, "not in education, employment or training" (The Economist, 2017)[4] About 57.7 per cent of people in the age group 5-29 years were estimated as 'currently attending' educational institutions. In rural areas, 57.4 per cent of the persons of age 5-29 years currently attended educational institutions compared to 58.5 per cent in urban areas (NSS Status of Education and Vocational Training in India, 2015).

India, with the largest youth population will be a major determinant of the future of work globally. "If the world is to achieve the targets under Goal 8 of the Sustainable Development Goals by 2030 it will depend on India's success in creating more inclusive growth and decent work, overcoming the challenges inherent in these three employment dimensions" (Verick, 2017). The three employment dimensions being

4 https://www.economist.com/news/business/21727093-humans-will-supply-digital-services-complement-ai-artificial-intelligence-will-create-new?frsc=dg%7Ce

whether and how women work, whether more formal jobs are created and which sector will be the main generator of jobs for youth.

Women in the Workforce

While participation of women has risen steadily in most countries around the world, there has been a decline in the number of women in the workforce in India.

During the 2000s, while male employment increased from 1999-2000 to 2011-12 at 1.9 per cent, female employment in the same period only increased by 0.3 per cent annually (Population Census, 2011). As per the Fifth Annual Employment and Unemployment Survey, 2015-16, unemployment rate for women is 8.7% and the labor force participation rate in India for women is 23.7%. According to the CMIE's latest figures (May-August 2017), the unemployment rate in India is 9.6 per cent for women (men 3.1%); the unemployment rate in rural India is 8.1 for women 8.1% (men 2.9%); and the unemployment rate in urban India for women is 12.3% (men 3.5%).

5. CHANGING NATURE OF WORK

5.1 Role of the Government

Table 4
Budgetary Allocations (2017-18)

	Absolute Numbers (in Rs. crores)	As % of GDP	As % of Total Govt. Expenditure
1. Budget of Govt of India in comparison to the GDP	2,146,734.78	17.6	
2. Allocation to Ministry of Labour & Employment	7,188.38	0.06	0.33
3. Allocation to Ministry of Skill Development and Entrepreneurship	3,016.14	0.02	0.14

Source: Union Budget Document (2017-18).

The government itself will not provide the jobs or will provide very few jobs of the millions that must be generated. The jobs will be generated by the actions of others in the system. However, stakeholders outside the government will be willing to change their current behaviour in order to improve the jobs/livelihood generation system only when they have 'bought-in' to a particular policy.

According to the Systems View and Scenarios report (CII, 2016), good public policy therefore must be:

a) Based on an understanding of the vast number of stakeholders involved and how they are interlinked.
b) The policy must have a high implementability quotient which means the very design must incorporate the 'how' of achieving the stakeholder buy-in required.
c) The process of policy-making must be participative from the pre-design phase. 'Policy' is a process and must induce changes in the behaviours of many actors, including the citizens (CII, 2016).

The following will ensure the buy-in from the stakeholders:

a) Acceptance of and support for the purpose of the policy - ensure that the government is actually responding to the needs of its 'customers' and hence setting the right metrics of success. 'Pre-digest' issues by conducting systematic deliberations on them amongst relevant stakeholders, examining all the important facets and outlining the structures of a couple of solutions.
b) See the benefits for themselves: merging of the self-interest of each stakeholder with the common vision of the policy.
c) Belief that the policy is fair and transparent- that all are being affected or benefited fairly.
d) Policy making as a process of societal learning (Ibid).

The rapid growth of jobs in the service components of economies indicates that it is time to recast 'industrial policies' more broadly as 'job policies'. The best industrial policies that analysis reveals, are those that stimulate faster learning in enterprises, thus empowering them to keep up with the changes.

a) Capacity building of governments: Skilling even of the bureaucracy itself is an issue to plan and ensure such strategies.
b) Adaptability to deal with change: Does the government have the institutional structure to deal with the change anticipated?

c) Do State Governments have a work strategy or an HR strategy?

   For example, in matching the requirements of skilling with that of future jobs. That is something that needs to be examined at the national level. Here technology can play an important role.

d) Providing a social security net: mass unemployment could lead to tremendous pressure and the government may need to step in to share the burden of social security contributions (presently made by employers and employees). For example, ESI, Pension contribution etc.

It seems that the government is moving towards 'Universal minimum wages' irrespective of the level of the pay of the workers. The Wage Code Bill, once approved, will empower the centre to set a minimum wage across all sectors in the country and states will have to maintain that. However, States will be able to provide for higher minimum wage in their jurisdiction than fixed by the central government. The proposed code on wages will subsume the Minimum Wages Act of 1948, the Payment of Wages Act of 1936, the Payment of Bonus Act 1965, and the Equal Remuneration Act of 1976.

The Labour Ministry is also in the process of condensing 44 Labour Laws into 4 codes- wages, industrial relations, social security and safety, health and working conditions.

5.2 Role of the Employers

Future of Work Arrangements and Employment Relations

Is the Future of Work changing or dismantling the traditional employment relationship? This is an important question for future research. Nepal has enacted some revisions to its labour laws by making provisions for part-time work and for employees having more than one employer. Another issue would be whether these new work arrangements are being imposed or on the other hand are preferred by the millennials/women? The study (proposed as future research) needs to cover to what extent "employee relations" have evolved or will evolve in the context of work being able to be done outside/ within an employment relationship. Together with the emergence and

expansion of the on-demand economy, this could mean that the classical employment relationship gives way to a more detached, mutual self-interested culture that is often more transient. In this context, workplace flexibility, both in terms of working time and location, is one of the most salient characteristics of the new world of work.

Changes to the traditional employment relationship model call for reflection on existing regulations to respond to and accommodate new forms of work (ILO, 2015). There is a need to revisit ILO Conventions and align them to the new economy requirements. E.g. Work time conventions may soon be not so relevant. These Conventions have been the backbone for Country level regulatory frameworks. These too need to be revisited.

According to the IOE, employers see these as the excessive regulatory burdens, including Employment Protection Legislation (EPL) and other administrative regulations, that hinder the harnessing of opportunities provided by the new realities of work in terms of new incomes and job opportunities. The debate on regulatory burdens that restrict employment and economic growth needs to be relaunched with the new forms of work in mind.

Impact of Technology on Jobs

The extent to which technology has affected jobs – In addition, it may also be good to explore the economics of using technology as opposed to 'cheap labour' in countries such as India, Bangladesh and to what extent technology will unfold in countries with a promising demographic dividend. (Issue of cheap labour as also technology as an enabler in demographic dividend)

What are the Future Drivers of Job Opportunities? – What are the Sectors/ Industries/jobs that would emerge? This is very important from an employer perspective and also in the context of the role of an Employers Organisation vis a vis its members. Sectors such as Health, Education, Social-care may have special significance even though technology would have an impact. These are sectors which may require the 'human touch' and acknowledge that there are certain jobs for which people will be needed as opposed to technology.

This also raises the issue of Skills capacity. Skills training will be required for workers to reskill them for the new technologies.

Another Issue is Migration

Mobility will have a major role in the future. There is enough research to prove the value of diversity in the workforce and this matters to businesses- diversity in gender, in nationality and in backgrounds. As we have seen, in the future of work, *talent will be at a premium*. Skills, no matter where they are found, will matter. Employers need to see this as a competitiveness issue. Therefore, mobility needs to be looked at in this context. Business will need to play a major role in combatting the xenophobia and nationalist views on migration that have become now unfortunately commonplace.

6. RECOMMENDATIONS FOR THE GOVERNANCE OF WORK

6.1 Governments

a) *Need for Active Labour Market Policies (ALMPS):* ALMPS are a broad term to cover policies that either reduce the cost of labour or those policies that help people find jobs. The extent of public spending on ALMPs will need to rise substantially as the effects of automation and advanced technological changes become increasingly clear. Some of these policies could include creating a fund to promote joint new technology or business model proposals from Industry and academia. Other policies could include carrying out economy and sector-wise skill assessments for exponential technologies. Citizens could be encouraged to undertake Life-long learning (LLL) programmes. The Singapore government has its 'Skills Future' programme to support LLL amongst its citizens supported by subsidies, scholarships and sponsorships.

b) *There is a need to accelerate the process of labour reforms*, which will provide flexibility and encourage industries to employ more workers.

c) *Policy view on 'skilled migration' from India*: If India is to be the 'skill supplier to the world', then skill development efforts to

should also incorporate the level of skills expected of migrant professionals and workers especially in countries where automation and technological change is already transforming the skills required. Opportunities exist as migration rates could potentially pick up, even though for how there seems to be little political appetite to allow large-scale migration.

d) *Support the competitiveness enhancing initiatives of corporates* in the wake of Exponential Technologies- the government should not step in during this phase and bring in any formal regulations or provide informal nudges related to stemming job losses. The market must be allowed to play out.

e) *Support labour intensive industries to drive job creation*: focus more towards the labour intensive sectors such as textile and leather through policy catalysts such as easing FDI regulations, FTAs with major trade partners, and industry friendly labour reforms.

f) *Skilling and re-skilling efforts*: Use the window of 2-3 years to effect large scale reforms in the general, technical and vocational education system. Already large training units exist within organisations as the gaps between the education system and requirements of the workplace are high. These skill gaps will only widen. There is an urgent need to focus on institutional upgradation and teaching of new technology. There needs to be a complete change in the curricula, teacher training and training infrastructure requirements in the light of these new technologies. Changes could include collaborating with and incentivizing industry for skilling in exponential technologies.

g) *Establish 'Centres of Excellence' in emerging exponential technologies*. Government needs to set up such tool rooms and labs across the country.

h) *Encourage start-ups that help to transform the unorganized sectors to organized ones using technology*. As mentioned above, the unorganized and informal sector in India is large producing roughly 50 per cent of the GDP and employing 92 per cent of the workforce. This highly inefficient sector provides immense opportunities for start-ups to build business models addressing the inefficiencies in various sectors.

i) Create a fund to support *awareness creation and adoption* of Exponential Technologies by the *MSME sector.*

j) Use of *technology in agriculture* to drive job creation in the agricultural sector through the '*Doubling Farmer Income' (DFI) scheme*.

k) Drive job creation through *government investments in infrastructure*. The government itself would need to play a role as source and catalyst of employment generation in the economy. The investments in infrastructure will also enhance the efficiency of the economy increasing its competitiveness.

l) Transform the public healthcare, education space and other development sectors through the use of technology assisted outreach workforce. Last mile delivery of services is a challenge and the use of technology will not only improve the reach and quality of the service but also provide gainful employment opportunities to rural youth especially female.

m) Regulation of education in India should predominantly focus on *creating an ecosystem that allows creation of accountable and autonomous institutions focusing on the 'quality of education'* while at the same time encouraging investment.

6.2 Industry

a) Creating a "vision for exponential technologies": Continuous reskilling or upskilling in terms of newer technologies as well as processes is expected to be the norm. Companies need to begin planning for these changes.

b) Use the 'Gig Economy' approach to leverage the competencies of the potential laid off workforce: Companies can set up a counselling, mentoring and reskilling mechanisms to support the laid off workers to develop them as gig/online workforce or entrepreneurs. This can be a part of larger manpower planning strategies.

Facilitating embracement of the gig economy would also open new doors for women to enter the workforce. Educated skilled women who are unable to continue a full-time employment within the corporate world could leverage new ways of working to achieve relevant source of incomes. This could also mark an important means to improve India's GDP.

c) *Create collaborative learning ecosystems for each Industry*: Industry associations and individual companies can work towards creating a collaborative learning ecosystem in their respective sectors to skill workforce/students on the next generation of technologies. Standardized curriculum could be developed with the support from educational institutes and can be made available through MOOCs, universities and traditional training mechanisms.

d) *Work in close partnership with the government to ensure success* of its efforts to take advantage of Exponential technologies for Indian economy and society.

6.3 Academic Institutions

a) *Creating entrepreneurs*: if the focus in developing countries is to remain on the creation of self-employment, then apart from providing a conducive environment/ecosystem for entrepreneurship, the focus in education systems must also address, *'What makes an entrepreneur? What are the qualities required/important to be an entrepreneur?'*

b) Focus on 'judgement driven skills/employability enhancement skills'

c) *Tailored courses with flexible completion timings* will enhance students' inclination towards learning.

6.4 Individuals

a) *Life-long learning* (LLL): Take responsibility for LLL.

b) *Getting used to the 'Gig economy':* The question whether our new changing world will provide gainful employment in the 'conventional sense' remains and consequently, the concept of day long jobs for a quarter of century in an individual's life will change- It is anticipated that flexi work with flexible skills will become more common place as the 'gig economy' changing the very definition of a job or work will change. There will be a greater emphasis on learning and experience sharing – in fact, we could even see second innings entrepreneurs or professionals as interns! Individuals and societies must be prepared for this as an inordinate amount of importance is accorded to 'stable jobs'.

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