

# ‘Future of Work’ in India’s Automotive Sector

Report of Workshop Proceedings

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# Introduction

This report provides an overview of the proceedings and outcomes of the Workshop on the Automotive Sector and the Future of Work in India (hereinafter referred to as the “Workshop”), organised at India Habitat Centre, New Delhi, on July 31, 2018.

The Workshop was attended by a diverse group of stakeholders which included industry representatives, academicians and researchers, and civil society. The discussions went over various components of the transition in the sector to Industry 4.0, including the impact of Industry 4.0-related technological innovations on work broadly in India, and specifically in the automotive sector. The discussion covered the impact of new technology with specific focus on socio-political perspectives to do with the structure of employment and forms of work within workspaces.

The workshop was divided into four sessions. The workshop began with discussions around the adoption and impact of Industry 4.0 technologies vis-a-vis the organisation of work. Within this, the key topics of discussion included the nature of the technologies being adopted, the factors driving the uptake of these technologies, and the impact on “tasks” constituting jobs in this sector. The second session focussed on the role of skilling and re-skilling measures as mitigators to projected displacement of jobs. Participants extensively discussed issues like the shifts in “competence profiles” (company, educational, or social) caused due to Industry 4.0, as well as skill development programmes in the country and their evolving pedagogies.

## Preliminary Comments

The Workshop opened with a brief introduction to the Centre for Internet and Society’s (CIS) research on the “Future of Work” (hereinafter referred to as “FoW”) vis-a-vis Industry 4.0. The production landscape was seen by the participants to have transitioned from the 19th century’s characteristic agricultural economy to a 21st century economy reliant on manufacturing. The group acknowledged that the growth of the manufacturing sector in India has been capital intensive, and as a result productivity was increasingly reliant on capital influx instead of labour.. The group also discussed the scope of research, and expanded on relevant issues, like the impact of automation on the organisation of employment, as well as shifts in the nature and forms of work, including through the gig economy, and microwork.

Since it was generally agreed on that Industry 4.0 would result in a fundamental transformation of the nature of labour and jobs, the workshop discussion focused on both the perspective of the industry as well as the perspective of the labour force, and acknowledged the importance of skilling measures in India. A specific example given was the lifelong skilling programs in Poland. It was further noted that in India, while

the skilling gap and related issues are well documented, a clear action plan remains absent, and needs to be implemented to address these issues. Other broad issues that were pertinent to be discussed included gender, labour relations, and effective policy formulation.

## Session 1

### Primary forces affecting adoption of Industry 4.0

The panel for the first session commenced with a discussion on possible challenges in adopting technology in industry 4.0. It was argued that the Indian economy was primarily affected by three primary factors: (a) technology, (b) globalisation, and (c) demographic changes.

One participant observed that, in India, it was the middle class which drove the demand for digital products. This was tied to the observation that India's large youth population created a high demand for customised automotive products, which in turn led to high levels of optimisation of the supply chain that could be concluded as a major factor in bringing Industry 4.0 technology to the automotive industry. The group recognised the top technologies that impact the automotive sector to be the Internet of Things (IoT), Big Data, cloud computing, and robotics. The group then discussed the cost of the technology and some participants argued that Industry 4.0 had not been able to penetrate India rapidly because of the high cost of technology. However, it was conceded that fundamental computational expenses had become exponentially cheaper and more capable over the past few decades. This in turn has reduced the prices of products like sensors, 3D printers and robots. As technology has become more affordable, companies have gradually started using them.

The discussion continued with the group discussing the technologies presently being adopted in the automotive industry. One suggestion made was to categorise the technologies based on which part of the manufacturing process they were being used in. The first category could include technologies being used in the production of different parts or commodities, and the second could include technologies that enable services that support the product's manufacturing process. Some technologies however, could occupy both categories. An example was robotics, which was technology deployed by Original Equipment Manufacturers (OEMs), as well as "Tier-I" suppliers. Additionally, robotics technology was also proposed for all cases where hazardous jobs were involved so as to minimise risk to human lives. Hence robots here satisfied both productivity as well as safety objectives.

## Changing Jobs And Roles

The group agreed that the type of tasks that could most easily be automated by the adoption of Industry 4.0 technologies would be those that are highly repetitive, either manual or cognitive, while tasks requiring high levels of creativity, empathy, cognitive ability and high level of sensorimotor skills do not seem to be automatable in near future.

The group continued discussing the new job roles that would be created/required in the automotive industry, and considered professions such as an auto analytic engineer whose tasks would require cognitive adapting, processing skills, complex problem solving skills, system thinking, and IT hardware skills. Others professions considered were 3D printing technicians, cyber security experts, and machine learning experts, who would require cognitive adapting abilities and processing skills. Part of the group was of the opinion that in the next 5 years, ~9 percent of existing jobs would be completely new jobs that do not presently exist, and have come about as a result of the adoption of Industry 4.0 technologies. Additionally, it was predicted that 50-55 percent of the jobs will require changed skill sets, and only about 10-15 percent of jobs will face an existential threat. In this regard, the panel clarified that while the automotive sector will have an increased number of jobs, they will come with a requirement for a higher order of skillsets. Hence, jobs in the automotive industry that would be in threat of being displaced include welding technicians, painting technicians, press machine operators, inspection assistants and plant material handlers.

The group agreed that the education system will have to change to account for soon-to-be essential skills like coding. It was also agreed that conventional systems would have to interlink with the skilling ecosystem to incorporate life-long learning capabilities, and also increase digital literacy. The panelists predicted that India can only afford to spend around 5 years in drafting the required policies that ensure that the skilling ecosystem is in the right place and the industry's growth does not get hampered.

## Session 2

### Technology And The Job Landscape

The second session commenced with a discussion on the impact of technology on labour and industrial relations. The conversations here centred around the creation or generation of jobs that the fourth industrial revolution would ostensibly accompany. The group attempted to delve into the source of this job creation, policies that could positively impact the automotives landscape in the context of new jobs. It was acknowledged that a concern with every revolution has been development or progress

without an increase in jobs. However the group also identified that historically, despite three industrial revolutions, India had not seen any increase in structural unemployment.

With respect to the quantitative impact of Industry 4.0 on employment in the automotives industry, some participants suggested that there was no evidence in the Indian scenario to suggest that technological advancement would lead to unemployment. However, they also conceded that the short-term impact of this sort of advancement was likely to be negative, since these advancements would reduce the number of people (and hence jobs) required to complete the same task. However when technological advancements increase productivity, the industry grows in size, and the overall demand is also likely to rise. Due to a scale effect, this will cause the total number of jobs to also increase. This scale effect was also said to be responsible for the number of jobs remaining the same within the Indian automotive industry, even though automation and robotics entered the sector in the mid-nineties. With respect to the qualitative impact, participants suggested that as technology altered the skill requirements of a profession, a demand for other skills would organically increase. This would result in what the group called a “polarisation” of jobs, where the demand for highly skilled labour steeply increases with a commensurate reduction in the demand for other jobs.

### **The Learnability Concept**

The next key issue addressed by the group was the challenge of re-skilling. The group discussed the problem of skills that were previously in high demand (like painting or welding), and how they were in danger of almost entirely being replaced by automation. A possible solution was seen in the form of skill training being provided by bodies that had wholesale industry participation so as to enable greater optimisation between the demand and supply ends of skill requirements.

Another problem highlighted was to do with the Indian education system. It was alleged that graduates increasingly display a lack of basic learning skills, and are often poor in math and reading/comprehending, skills which the group was convinced were an essential foundation for future advanced skilling programs. Unless the foundational education system in the country improved significantly, skilling programs would only have limited positive effects. The group also clarified the concept of learnability, referring to it as the basic assumption is that human beings adapt to new technologies as and when the requirement arises.

### **The Contract Labour Scenario**

The group next spoke about the present schematic of employment in the automotive sector being overrepresented by contract based labour. The group considered the feasibility of this practice. Some statistics were brought up, notably the fact that of

around 32 million people in the Indian auto industry, only around 2 million are direct employees, while the remaining 30 million are indirect employees. Some participants inferred from this that the employment landscape in India was one that continued to encourage contract-based labour. However, other participants explained that most Indian automotives manufacturers used a combination of contractual and permanent workers where permanent workers were given supervisory tasks, like checking and inspection, while contractual workers were given manual tasks that often involved heavy lifting and moving. Other statistics discussed included the fact that most large manufacturers have 300-400 robots in total. The participants acknowledged that the government's amendment of the Apprenticeship Act had widened its scope, and made it liberal, but were of the opinion that policy measures should be practical and focus on future scenarios, while remaining cognizant of the present conditions surrounding employment as well.

One of these participants pointed out that there were also more challenges in educating or skilling a contractual labour-force vis-a-vis specific technologies. Another point made was that companies often also replaced contract labourers every few months, which made it difficult for these workers to learn/retain skills.

The participants agreed that, since many areas in the formal sector were moving to the informal sector, it would be counterproductive to draw a rigid line between the two.

## Session 3

### Challenges Within The Labour Law Framework

The participants in the third session focused on India's labour laws, and the changes required to prepare for Industry 4.0.

Some participants were of the opinion that labour laws in India are archaic, and rigid, and that they are not favourable to the implementation of Industry 4.0. The group acknowledged however, that in the last couple of years, the government has taken a lot of initiatives to consolidate the laws and simplify them. The participants were of the opinion that the ease of doing business in India had been the primary focus here. The panel also spoke about the Industrial Dispute Act, which has a comprehensive jurisdiction, but remains outdated in the present scenario, as it is incapable of dealing with several present day problems, including challenges tied to Industry 4.0.

An example discussed was Section 9A of the Act, which mandates all employers to provide a 25-day notice before implementing any changes or improvements that could potentially displace the employees. The participants observed that this would apply in the context of introduction of automation, or other technologies to many workplaces,

and in the present landscape, employers had very limited flexibility in matters such as these.

The participants also unanimously agreed that the the definition of the term “contractual labour” required much clarification and improvement. Presently, different High Courts are adopting different views and there is yet to be a Supreme court judgment that settles this polychotomy. Other issues discussed include the time it took for most cases to be settled, and heavy costs on the workers. The group was of the opinion that the entirety of the labour law regime in India needs to be changed so that it can effectively regulate a sector with cognitively skilled workers.

## Session 4

The final session commenced with a discussion on the state of the skilling and education ecosystem in India. The group looked at the steps previous governments had taken in this regard, and attempted to determine an effective future plan. This session also discussed the World Development Report (WDR) 2019, and its 3 pronged skilling strategy of early time Investment, tertiary education, and adult learning outside of jobs.

### **New Social Models Involving Cohesive Participation**

The group went on to discuss the lacunae present in the skilling ecosystem in India. Issues discussed included the duration of skilling, where Vocational Training Providers (VTPs) only run three month-long programmes (for e.g. Aajeevika Program under National Rural Livelihoods Mission).<sup>1</sup> Most students of these programs come from poorer backgrounds and often have only completed 8 or 10 years of education. Because of this, even after completing their skilling program, they’re considered by many (including ASER’s reports) to be “half-educated”. As a consequence, these individuals almost never obtain the premium wage for the skills they are trained in.

Another problem acknowledged was the shortage of qualified and experienced trainers for skilling programs. Some statistics brought up included a comparison of the percentage of students who enter the “vocational” stream in China (close to 50%), and India (4-5%). Additionally, Chinese teachers are required to have industry experience to ensure security and progress in their professions.

The participants spoke about recent measures taken by OEMs to collaborate with skilling partners to address this problem from within. An initiative by the OEMs, called

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<sup>1</sup> Uttar Pradesh Skill Development Policy, 2013. Available at <[http://www.upsdm.gov.in/pdf/Resources/Information/Uttar\\_Pradesh\\_Skill\\_Development\\_Policy.pdf](http://www.upsdm.gov.in/pdf/Resources/Information/Uttar_Pradesh_Skill_Development_Policy.pdf)>

the “dojo training centre” has begun the process of training entry level workers. Many other companies have also begun training both entry level workers, and selected students, across areas including R&D, sales, purchase, HR, finance and outsourcing functions.

The group also discussed which skills would be required in the new landscape, and agreed that some crucial ones included the ability to reason, cognitive skills, logic skills, advanced problem solving, socio-behavioral skills, empathy, emotional intelligence, relationship management, team leadership, and conflict resolution. All of these also came with the qualification that they were things which machines couldn't accomplish, or feasibly accomplish. A participant observed that MIT has recently opened what it has labelled as the Charm School, which is designed to develop soft skills in students, like eye contact, communication, and emotional values. The group also spoke about the adaptability of skill, and considered it especially important since rapid technological advances make it difficult to focus on other specific skills as a guaranteed long term investment.

## Concluding Remarks

Industry 4.0 continues to be talked about in different contexts and lacks a comprehensive and consensus-based definition. The workshop agreed that the organizational structure of industrial production has to adapt to remain relevant in the fast changing markets of the future. These structures of production will have to meet demands of speed, as well as complexity, and must evolve correspondingly.

Industry 4.0 in India is likely to create or face problems that come from the labour force, and the skilling ecosystem. Additionally, the legal regime around these sectors, without educated evolution, will struggle to incorporate newer styles of operating engagements like platform and gig work.

In India, because of the informal nature of a significant number of working arrangements, it is unreasonable under the present regime to expect a workforce that continues to remain relevant and employed for a longer term. Hence, this kind of skilling provides very little incentive for large companies to invest in it. Policy making in India also suffers from a similar problem of constantly playing catch-up. While the group attributed this in large part to the bureaucratic structure which originally created a pressing need for domain expertise in policy making, it also agreed that it is the institutional design of policy making institutions that needs rectification.