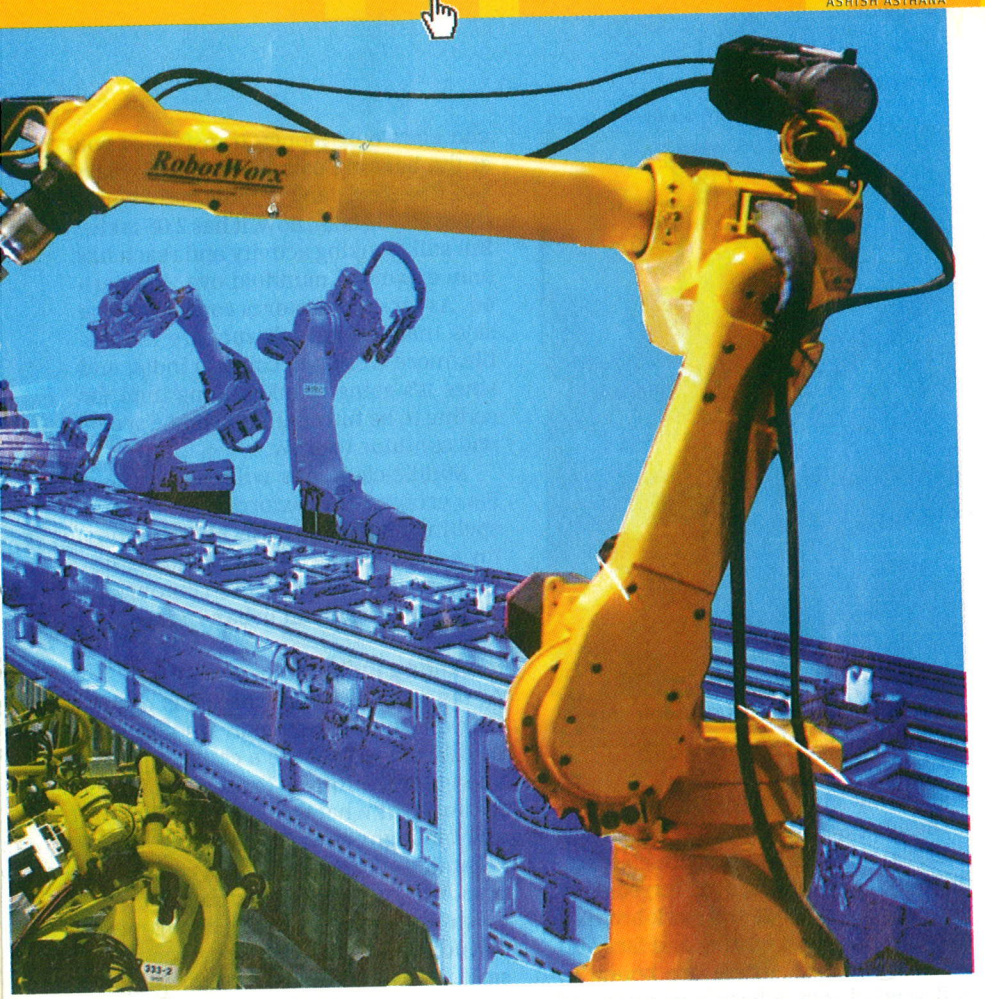
Here Come The JOB KILLERS!

Robots, automation, artificial intelligence, deep learning software and similar techno advances are supplanting humans globally and taking away jobs. What does the future spell for India?

Pratap Vikram Singh

At Raymond Limited's modern textile facility in Vapi, whenever a supervisor has to check up on the looms, he doesn't go walking around the factory floor asking the workers. He just looks at a computer screen. Looms in operation, their speed, their electricity and steam consumption, their error alarms – everything is available to him at a glance. The factory rolls out 75,000 metres of fabric daily, employing 1,100 workers. Just four years ago, a traditional weaving unit would produce no more than 18,000 metres, employing 2,600 workers. Harish Chatterjee, vice-president (manufacturing) at Raymond, attributes the four-fold gain and halving of labour cost to automation. Fabric quality improved: the Vapi unit, he says, produces

ASHISH ASTHANA



better stuff than their unit in Thane.

With advantages like that, it shouldn't be surprising that manufacturing will see a sea change that will kill thousands of jobs and even end whole professions. Already, lists are being made of professions and trades likely to die out in the next five, 10 or 15 years. Immediate effects, though, are already starting to be felt in industry. In September 2016, Raymond chief executive officer (CEO) Sanjay Behl told the *Economic Times* that, of the 30,000 workers in 16 factories, 10,000 would lose jobs to robots and automation. "We have machines which do over 50 percent of loading, pressing, wrapping and bale making," says Chatterjee. Leave alone factories, canteens have been automated: there are machines making 90 chappatis in a minute, matching the produce of 25 workers.

It's the same story across geographies, across industries.

To reduce production cost, German sportswear maker Adidas had moved production to China some 20 years ago. But with wages rising over the years in Asia, especially China, the company has decided to resume manufacturing in Germany, this time using automation and robotics to cut costs. Adidas chief executive Herbert Hainer announced that the company is setting up a 'Speedfactory' in southern Germany, where shoes will be made using robots and 3D printers. Each 'Speedfactory' will employ about 160 workers, against the 1,000-odd a normal factory would require. This will also save on transport – factories can be set up where the market is. Similarly, Nike is considering, in the words of its chief financial officer, "engineering the labour out of the product". This might translate into shutting down Nike factories in Indonesia.

In his book *The Rise of the Robots*, Silicon Valley entrepreneur Martin Ford explains how automation is leading to the reshoring of factories and services in first world countries. He cites the case of Kura, a Japanese restaurant chain: "In the chain's 262 restaurants, robots make the sushi while conveyor belts replace waiters... Kura's automation-based business model allows it to price shri [rice] plates at just 100 yen [roughly ₹58!], significantly cutting its competitors."

Industrialisation 4.0

The first industrial revolution rolled in with the invention of the steam engine. Centralisation of production ushered in the second. Computerisation of factories, workflows and services brought about the third. Now, with advances in IT, algorithm making, cloud computing, 3D printing, analytics, and the internet of things, a very high degree of efficiency is being achieved in not only manufacturing, but also engineering, transport, retail and even medicine and journalism. This new wave, which banks on self-learning or deep learning software and robotics, is being referred to as industrialisation 4.0.

Last year, the International Labour Organisation (ILO) found that nearly 60 percent jobs in five ASEAN countries (Indonesia, Philippines, Thailand, Vietnam and Cambodia) faced a high risk from automation. Its report said women, less educated workers, and unskilled or semi-skilled workers were most vulnerable. The contours of this varied from country to country. According to ILO's report, in Vietnam, "where the share of low skilled elementary occupations in total employment (around two in five) is the highest among the five ASEAN country samples, the overall probability of computerisation is also most pronounced". On the contrary, Thailand has the smallest share of low-skill employment – less than one in ten. Vulnerability to automation was also related to the structure of the economy. Workers in Thailand and Vietnam, which have diversified economies, run a 50 percent risk, whereas in Cambodia, which is less diversified, they run a 68 percent risk.

Jobs particularly in danger are in agriculture, garment making, construction. Extrapolating to India, well over 60 crore people (nearly half the population) are dependent on agriculture, and 26 crore are directly engaged in

agriculture. Yet the yield per hectare is less than half of what 25 lakh Americans produce. Economists predict that the quest for efficiency will perforce bring automation to Indian farmland. In March, Peter G Hall, vice-president and chief economist of Export Development Canada (EDC), a credit agency for exporters, told a business gathering in Delhi: "If 600 million Indians contribute only 15 percent of the GDP, it's not efficient." Automation, say economists, is inevitable if production targets are to be met.

Study after study says developed countries won't be spared: being advanced in technology, they are bound to posses, sooner rather than later, robots that will eat jobs. A Deloitte study predicts a 77 percent probability of repetitive jobs being lost and estimates that the UK's public sector alone will lose 8.5 lakh jobs by 2030. Four years ago, Carl Benedikt Frey and Michael A Osborne of Oxford found that 47 percent of US jobs are at risk. They listed 702 jobs, including telemarketing, sewage work, insurance underwriting, watch repair, clerical work, library work, and data entry. On their list are quite a few jobs one wouldn't expect: math technicians, freight agents, tax paper preparers.

Jaijit Bhattacharya, a partner at KPMG, says, "Initially, automation replaced jobs *and* created new ones. But we are heading for disaster. At the pace we are going in for automation, more jobs will be destroyed than created." He offers two examples. The first is of driverless cars, which could put millions out of jobs. The second exemplifies a paradigm shift in innovation: the differential axle, aimed at preventing skidding while automobiles negotiate a curve, at which time wheels on the inside of the curve have to move slower than those on the outside. Decades of continuous innovation went into creating better mechanisms to transmit the power of a single engine to different wheels at different rates. And, of course, the internal combustion engine too underwent hundreds of improvements. "On the other hand, look at a Tesla car," he says. "It's got four motors (one for each wheel) and a battery. That's it! The old technology was quite sophisticated; the new one takes away all the complexities."

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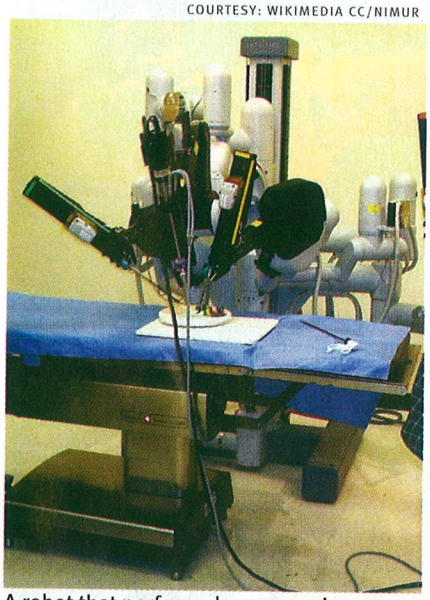


A robot that performs laparoscopic surgery

Besides, a new wave of advances in artificial intelligence (AI) and self-learning software is taking over targeted advertising, investment and stock-broking, diagnostics, report writing and face and voice recognition. These are bound to end several jobs where one supposed humans are absolutely required. Some experts go so far as to say that in 20 years, all present-day skills will become redundant. What, then, will be the skills of the future? No one is guessing.

Impact on Indian economy

It's not going to be sweet for India. The IT sector, responsible for a big boom in the economy, is readying to cut jobs. Already there are reports that automation may lead to a lay-off of 6,000 employees at an IT giant. One study says 3.4 million IT-sector employees stand to lose jobs.

Mohandas Pai, former director at Infosys and chairman, Manipal Global Education, says, "Jobs that require creativity, logic and discipline like an architect or software engineer will be difficult for machines to do right now, it will take time." But jobs that involve following a step-by-step routine will disappear. Banks, for instance, are doing with less staffing, thanks to ATMs and electronic money transfers. "Look at the banking data from RBI 15 years ago. The State Bank of India had a workforce of 2.25 lakh; now, it has 2.05 lakh." But still, banking activity and reach has only expanded manifold over the period. As far as IT sector is concerned, Pai says that, though job cuts are inevitable, more work will come to India, and since it's going to take a long time for coding to be fully automated, the sector will continue to grow.

Middle-class jobs will decline, says Pai, echoing the Oxford report – and spelling out a huge crisis of adaptation for a class that has, since economic liberalisation, redefined the contours of society, especially in urban India.

Reskilling India

At the pace at which change is occurring and bound to occur, it's going to be difficult to prepare a country of the young for the future – especially when it's not clear what the jobs of the future will be. Right now, the Indian government doesn't seem to have a concerted response to industrialisation 4.0. Ramesh Abhishek, secretary, department of industrial policy and promotions, said at a conference on the digital economy, organised on April 4 in Delhi: "For smooth transition to industry 4.0 and smart manufacturing, the government is working on a policy, which addresses issues such as data security, data storage and privacy." Abhishek and NITI Ayog CEO Amitabh Kant did not respond to several interview requests from Governance Now.

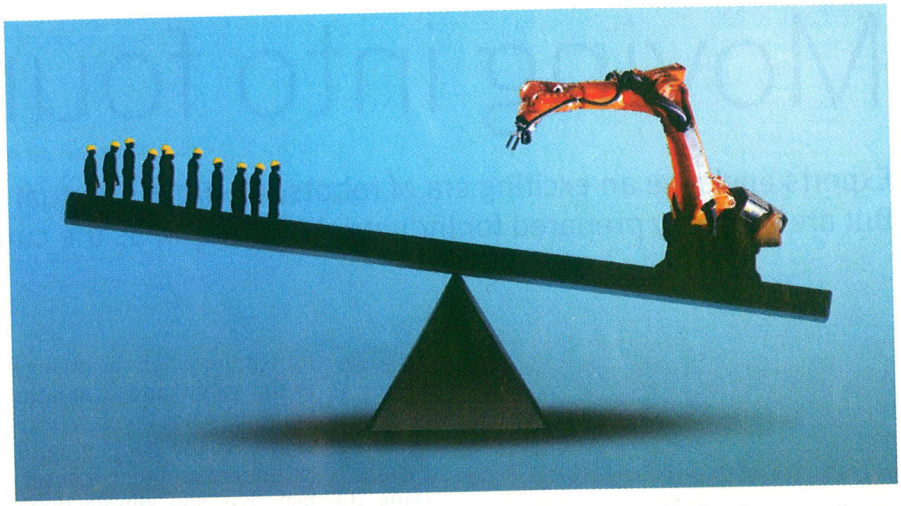
Major businesses, if not industry as a whole, are however gearing up. Take the case of NIIT Ltd, a learning management and training solutions provider, founded in 1981, when IT companies were being set up and didn't have enough candidates to hire. Today, as businesses across sectors are moving to the cloud and to artificial intelligence, traditional skill sets may become obsolete. NIIT itself is going through a digital transformation to make itself and its services relevant. "We see across-the-board change in our three business segments: school and retail businesses, where we deal typically with undergrads, fresh grads or working

professionals, and companies themselves," says Udai Singh, chief strategy officer, NIIT. Each of those verticals are creating charters to see how they can reinvent themselves completely for the future. "I would say that if today 15-20 percent of our work is directly in this area, five years down the line I don't think we would be able to justify anything that is not in this area. It is a 100 percent makeover that has to happen in the next five years," Singh says. Such talk is being heard from all service companies. "Today, when we look at the startup phenomenon, what people want are deep generalists, meaning, they should understand the whole development cycle and have deep expertise in their chosen area of specialisation. Just knowing one or the other won't do," says Singh. "Demand will be for developers who can develop full-scale products, right from anticipating the need, to its analysis and design, development and its final launch. That's very different from the way industry evolved over the last 20-30 years. So we built a programme to actually create people with these product development mindsets and well versed with the latest tools and technologies."

Stuck in the past?

The Skill India programme, launched in 2015, has the ambitious aim of enhancing the skills of over 402 million Indians. But its priorities seem out of sync with the future. It identifies 24 key areas requiring skilled workers, which include auto and auto components, beauty and wellness, food processing, handlooms and handicrafts, leather and leather goods, domestic help, gems and jewellery, and tourism, hospitality and travel. But many of these sectors seem ripe for automation. As it is, Skill India seems to have led to the employment of only 5-10 percent of those trained under it.

"The government strategy is flawed," says Pai. He estimates that India has some 40 crore people available for jobs, of which 10 crore are formally employed, and 25 crore are in the rural sector (largely agriculture), which leaves only five crore doing unskilled jobs. Which is why, he says, the Skill India programme doesn't seem to be



getting enough people to train, making the 400 million target meaningless. Besides, he says, many rural workers are artisans, such as weavers, and farmers are skilled in what they do. What is important, he says, is to recognise the new skills these sectors will need to make them more productive. This, he says, cannot be dictated from the centre. "Each state has to evolve its own strategy. Each state should have the kind of industry required for their workforce."

Reform India

The first major reform, and there is a consensus on this among techno-optimists and techno-pessimists, is in the school system, which doesn't impart training in analytical and imaginative thinking. "K-12 school reform needs urgent attention, because the most important skills in the new world of work are reading, writing, soft skills and arithmetic – you can't teach people in six months what they should have learnt in 12 years," says Manish Sabharwal, founder, Teamlease, a human resource company. "Much of the problem is the schooling system. It doesn't teach people to think and question. It just teaches people to mug up and write."

"The government policy is flawed. Each state has to evolve its own strategy; it should have the kind of workforce it needs."

Mohandas Pai
Chairman, Manipal Global Education

Says Bhattacharya, of KPMG, "What are we doing? We are turning our children into fossils rather than human beings who can contribute economically. Are we teaching children how to set up a company, how to run a business? How to leverage the complex legislative system? We are not teaching any of these." He offers the example of Finland, which gives children free time to innovate.

Sabharwal also speaks of reforms that will usher in flexible labour markets, because employment is shifting from being a lifetime contract to what he calls a "taxicab relationship" – a gig economy, where a freelancer does a job, gets paid, and then takes on another. By teaching students how to learn by themselves, which is going to be the future of learning, and by teaching them to flexibly adapt to the arriving gig economy, our planners might prepare them for a world where automation will keep taking away jobs. For now, uncertainty looms. ■

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