

Session 24: Will the Factory of Tomorrow Still Need Labour?

Coordination by Eric Labaye

Over a decade, the global economy has been affected by several technological revolutions. Today, new digital tools are in the process of profoundly transforming the industry. On the eve of this fourth industrial revolution which is already underway, these new skills and technologies have the potential to generate great productivity gains but also to disrupt our business models, creating a 'rebalancing effect' in many areas. In this industry 4.0, the biggest challenge will be to continually attract consumers, and despite low production volumes, to maintain profits.

Global value chains are being reshaped by growing demand, new industrial capacity, developing countries catching up and ever-changing new technologies. According to a study by the McKinsey Global Institute, major structural changes in value chains are taking place. Although production and trade continue to increase in absolute terms, the intensity of trade decreases in almost all value chains producing goods. It is globalization itself, as we have known it for several decades, that is undergoing a transformation. The decline in trade intensity (in particular, due to trade tensions, which have a great impact on world trade and commerce) is particularly obvious in the most complex value chains. However, this trend does not mean that globalization is over. Rather, it reflects the fact that China and other emerging economies are now consuming more than they produce.

⇒ **It is therefore a matter of understanding the evolution of the current landscape in order to prepare for the next chapter of globalization and the challenges it will bring.**

In the context of a transition from an old world based on tangible goods to a new world based more on intangible produces, global value chains are increasingly using knowledge. In all of these value chains, capitalized expenditures on R&D and intangible assets such as brands, software and intellectual property increase in proportion to revenues. Overall, it rose from 5.4% of turnover in 2000 to 13.1% in 2016. This trend is particularly obvious in global innovation value chains.

Coupled with demographic changes in emerging countries, it is likely that a direct effect of this digital revolution will be the need for more proximity with customers and thus relocations. Proximity could therefore become a fundamental criterion and would lead to a profound transformation of the industrial footprint.

⇒ **Where are these major transformations more likely to occur? Which ecosystem appears to be the most prone to ensure the development of the industry of tomorrow?**

Capital investments in robotics and artificial intelligence research centres and start-ups are huge. But these new and constantly evolving technologies could also have effects on human capital. Because, after the advent of robotics, the revolution of software and artificial intelligence, it would be easy to think that the workforce will soon become obsolete.

In the age of automation, artificial intelligence (AI) technologies offer new opportunities for employment and economic development. Human needs are shifting to positions with different skills, and to a more skilled workforce.

- ⇒ **Are we thus witnessing a reshaping of the use of human capital in production chains? How is this transition taking place? What are the key roles and competencies now?**
- ⇒ **Deeptech is a strong area of development. Will it restore the industry's strength? Will it transform it in depth? What types of innovations should be expected? What types of skills will be needed? How do new technologies affect the way people work?**

There is an increase in labour productivity through complementarity with certain tasks. And at the same time a substitution for certain tasks previously performed by workers. AI has shown that potential substitution is more important than previously thought since some “complex” tasks are being resolved by AI algorithms (autonomous driving, text composition, etc.) Thanks to these new technologies, there is also a reduction in a number of international costs, but also an increase in trade in services, which are traditionally not tradable (call centers, surgical operations, etc.). It also seems essential to train workers with the flexibility required to adapt to the needs of the future and to adopt technologies at the right pace.

Increased labour productivity is a source of increased labour demand. This may be uneven in the labour force. For example, technical progress has long been seen as a “skill-biased” process, which increases the relative demand for skilled workers (relative to unskilled workers). This may have contributed to the increase in inequalities (wages and employment rates) observed in many countries.

But the increasing substitution of work for robots could have more dramatic consequences by decreasing the demand for work. In particular, it could help to explain the recent polarisation of the labour market, with a concentration of labour demand on very low-skilled tasks, particularly in services, and an absolute drop in the demand for workers with intermediate skill levels replaced by machines.

According to the McKinsey Global Institute, a median automation scenario by 2030 could be accompanied by unprecedented new job creation that could offset the jobs it has displaced. Around the world, 400 million jobs could be automated by 2030 (15% of the labour stock) while 600 to 900 million jobs could be created. The jobs of the future would refocus on the skills remaining in the human domain, which are essentially the creative, relational,

expertise and management dimensions. This leads to a profound shift in skills for a large part of the global workforce

This automation would then be part of the historical logic of the great technological revolutions which have created far more jobs than they have destroyed. For example, since 1980, computerization in the United States has created 15.8 million net new jobs. With respect to automation, the outlook could be similar: it could be accompanied by a sharp increase in global labour requirements. Which scenarios are to be expected? What types of innovation are to be prepared? What will be the impact in terms of growth? Employment? Skills?

In the worst-case scenario, the only areas where labour demand will remain high are very low-tradeable and low-value-added service sectors, such as services to individuals; while highly qualified tasks will be increasingly automated and will therefore be subject to the same fate as intermediate tasks whose demand has declined over the past 20 years. In a more positive scenario, recent technical advances are no different from the industrial revolutions experienced by economies in the past. They are a source of growth, but with a need to reinvent oneself permanently and to introduce new sectors of activity that are still unknown or not yet developed (block-chain, green industry, health, etc.) Whatever the scenario, automation is an inevitable process that will lead to labour market movements. Even in an optimistic scenario where the long-term effect is positive, there may be significant short-term costs as the transition requires the reallocation of workers to new tasks and other sectors.