

INDUSTRIAL REVOLUTION (IR) 4.0 IN VIET NAM: WHAT DOES IT MEAN FOR THE LABOUR MARKET?

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Introduction

The world of work is currently undergoing major processes of change on an unprecedented scale with several forces transforming it, including the onward march of technology, the impact of climate change, the changing character of production and employment etc. (see ILO Centenary Initiative on “the future of work”)¹. In particular, countries all around the world are now standing on the brink of a technological revolution, commonly called the Industrial Revolution (IR) 4.0.

Asia & Pacific region is the case in point, and most particularly Viet Nam, where rapid technology innovation and adoption at the workplace are diffusing faster than ever before, with some variations across sectors. This policy briefs introduces some of the opportunities and challenges for the world of work.

What is IR 4.0?

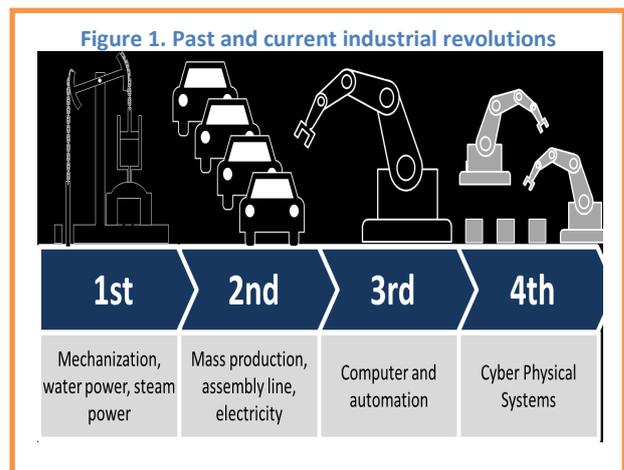
Previous industrial revolutions have been characterised by the adoption of various techniques for production (**figure 1**). “The First Industrial Revolution used water and steam power to mechanize production. The Second used electric power to create mass production. The Third used electronics and information technology to automate production. Now a Fourth Industrial Revolution is building on the Third with the digital revolution occurring since the middle of the last century. It is characterized by a fusion of technologies that is

blurring the lines between the physical, digital, and biological spheres.”²

In its broad definition, IR 4.0 is characterised by rapid technological advancement through increased use of mobile communication and interconnectivity (‘internet of things’), big data, artificial intelligence, robotics, autonomous vehicles, 3D printing, nano and biotechnology, quantum computing etc.

What could be the impacts of IR 4.0 in the world of work in Viet Nam?

With the transformation of entire systems of production, management and governance, the IR 4.0 offers a wide spectrum of opportunities and challenges in the world of work, with direct and indirect impacts on sectors across the economy



(agriculture, industry and services) as well as categories of workers including the most vulnerable groups (youth, women etc.).

Technology as creator and transformer of jobs

¹ This policy brief was written by Miranda Kwong, CO Hanoi
¹ http://www.ilo.org/global/topics/future-of-work/WCMS_448448/lang-en/index.html

² World Economic Forum
<https://www.weforum.org/agenda/2016/01/the-fourth-industrial-revolution-what-it-means-and-how-to-respond/>



Technological advances can support *structural transformation of the economy* (shift away from the agriculture to the manufacturing and services sectors) by facilitating labour mobility of workers across sectors and occupations and/ or easing work by lifting up workers from cumbersome tasks.

New technologies: jobs creation, transformation or destruction?

In manufacturing industries of developed economies, “job polarization” effects have created fear about job destruction of certain occupations and rise of inequalities.

The concept of “*job polarisation*” describes the trend towards an increased demand for high-skilled, higher-wage workers (such as managers, professionals and technicians) and low-skilled, low-wage occupations (such as sales workers, elementary, service). At the same time, the demand for middle-skilled, middle-wage jobs declines (such as clerks, plan and machine operators). This U-shaped employment distribution is commonly found in labour market in developed economies (including the US and Western Europe) that are polarizing.

Overall, this shows that technological changes will not have an equal impact on workers. **The extent to which a worker gains or losses from automation depends on a multiple number of factors including the skills’ level and whether the worker is a complement or substitute to robot and machines.**

Source: Lawrence F. Katz, and Robert A. Margo, “Technical Change and the Relative Demand for Skilled Labor: The United States in a Historical Perspective” (2013) and Maarten Goos, “How the world of work is changing: a review of the evidence” (2013)

- **In the agriculture sector, the adoption of mechanisation is key for labour productivity increases and the diversification of the rural economy**

With two thirds of the labour force in rural areas, employment in agriculture, forestry and fishery sector is widespread, accounting for roughly 40 per cent of total employment in 2017.³

While the sector’s growth has slowed down over the last decades, there is still some great untapped

potential in off-farm activities and diversification in the non-agriculture sector in rural areas with productivity gains arising from mechanisation”.⁴ For example, the expansion of e-agriculture⁵ has the potential to enhance agriculture, forestry and fishery outputs and foster rural development through the emergence of “green jobs”⁶.

- **Within the manufacturing sector, adoption of technology advancements has the potential to shift workers to higher skilled occupations with higher productivity**

The ILO report “*ASEAN in transformation: How technology is changing jobs and enterprises transformation*” indicates that majority of total employment in the manufacturing sector, particularly in the *textiles, clothing and footwear (TCF)* and *electronic and electric (E&E)* sectors, will be impacted by IR 4.0. While high-tech has not yet completely entered the industries, there are some signs of penetration in industries. Trade, foreign direct investment and associated technology have all contributed to productivity growth. In those industries, significant changes in the medium to long term are most likely to occur due to disruptive technologies, for example in 3D printing technology, industrial robots, Internet of Things (iv) computer-aid designs, and body scanners etc.⁷

In turn, subsectors in engineering, transport and infrastructure will likely boost demand for jobs.

- **The digital revolution has the potential to shift workers to more customer-oriented jobs in the service sector**

Technology advancement also leads to a rise of the “*gig economy*” where a number of jobs are increasing being performed through online platforms (Uber, Grab, e-commerce).

Ultimately, the adoption of new technology innovations could improve workplace safety, increase productivity, wages and stimulate aggregate demand, combined with anticipated increase of FDI inflow and easier access to major export markets

⁴ Growth, structural transformation and rural change in Viet Nam, UNU-WIDER 2017

⁵ See for example the FAO-ITU E-agriculture Strategy Guide

⁶ According to the ILO, green jobs are decent jobs that contribute to preserve or restore the environment, be they in traditional sectors such as agriculture, manufacturing and construction, or in new, emerging green sectors such as renewable energy and energy efficiency

⁷ Assessing the Drivers of Change for Viet Nam’s Labor Market: Focus on Trade and Technology (Centre for Analysis and Forecasting, draft 2018)

arising from FTAs, particularly CPTPP and EU-Viet Nam FTA, once ratified. As productivity increase and working conditions improve, this can further lead to a reduction of working hours and creation of more leisure services and products.

➤ **Ensuring workers' protection and decent work in the context of the IR4.0**

Technology per se is neither good nor bad as technology cannot automate all tasks that require for example perception and manipulation, creative intelligence and social intelligence (Frey and Osborne 2013).

Therefore, supporting workers and their protection in this process of rapid changes remains crucial. In particular, the importance of the informal economy together with the rise of casualization and non-standard forms of employment put concerns on workers' protection and the quality of employment as the employment relationship (employer/employee) becomes more blurry.

“The digital revolution must be built on decent work which gives humans dignity” (Guy Ryder, Director General, ILO)

How to maximize the use of IR 4.0? Some examples

I. Agriculture sector:

Technological advancement has been used in multiple ways in the agriculture sector in developed economies through increased use of technology and mechanisation in production to increase agricultural productivity (*direct contribution*) or through the use of ICT as a tool to empower farmers to take informed decisions (*indirect contribution*).

Specific examples of using ICT include the use of smartphone mobile apps in agriculture, the use of Geographic Information Systems (GIS) for farming and fishing or satellite technologies and other agronomy sciences that increased significantly agriculture and fishing outputs.

Consumers and producers are also increasingly aware and conscious of ecological matters, fair trade and the importance of agricultural biological products with their specific characteristics as opposed to chemical products and mass production. The use of ICT to promote these biological and organic products is often used to sale and promote

quality products together with a range of strategies including packaging, sizing and pricing.

II. Industries:

The use of high-tech technologies is most commonly found in industries. In industrialised economies, technologies have been used in multiple ways in order to boost efficiency (both quality and quantity) and raise productivity.

As examples, successful Asian economies like Singapore, South Korea, Taiwan and Malaysia have achieved their economic miracles with strong industrial development policies that placed a strategic focus on specific export-oriented sectors.

In all cases, education and training policies have prepared the labour force for entry into targeted industries, by helping to absorb the know-how and technology from the rest of the world and to diversify into new and more sophisticated products. In Singapore, for example, the share of high-skill and technology-intensive manufacturing exports represents almost 50% of the workforce.

IR 4.0 - Perceptions of workers and managers in the manufacturing sector

Workers' views on the impacts of IR4.0 differ according to their experiences. Some high-skilled technicians report that IR4.0 is synonym of job opportunities, especially for those working in software. Some low-skilled workers are not concerned by the negative impacts of IR4.0 on jobs which they think is limited given the availability of a high number of job vacancies. However, some also express their fear of the likely negative impact of robots on the income of low-skilled jobs.

"The Industrial Revolution is extreme development in technology in many areas of artificial intelligence, robots, internet of things, automated trucks, 3-D printing machines, Nano technology in recent years. This advancement has strongly positively impacted human society...My job is on Internet of things. I work on softwares to connect devices and machines in order to make interaction from distance. For example, I work on connection with air conditioning, refrigerator, and television through Wi-Fi, Bluetooth".

Source: Nguyen Phuong and Nguyen Quyen (2017), How do workers perceive Industrial Revolution 4.0? Views from Labor-Extensive Industrial Parks in Electronics and Footwear Sector.

III. Service sectors:

The use of mobile devices and increased widespread access to internet has fundamentally changed the world of work. The rise of the gig economy, digital platform, freelancing and e-commerce, bring up new forms of work that can be performed remotely (or partly). They also significantly contributed to expand markets beyond borders by connecting an increasing number of people.

On-line learning is increasingly used to foster skills' development throughout the life cycle. For example, the use of online courses such as MOOCs (Massive Online Open Course) expand opportunities for youth to learn and share knowledge at a minimal cost on a variety of topics.

What could be the priority areas of action for Viet Nam's labour market?

The 4th Industrial Revolution is here and cannot be avoided, yet the extent to which it penetrates different sectors of the economy varies.

While the impacts on the jobs are difficult to predict, some ingredients are critical to carefully manage the process of transformation. In doing so, barriers to occupational, geographical and sectoral mobility need to be removed.

➤ Moving up the skills ladder

Having the *right* skills to increase the ability to adapt to the need of the labour market and drive the process of technological advancement forward is critical.

A combination of both *technical* skills (such as STEM) and *core* skills (creativity, critical thinking, communication, teamwork etc.) are needed to best equip the labour force and foster resilience to the evolving labour markets.

Training, (multi) skilling, reskilling, lifelong learning throughout the life cycle are all critical in and out of the job.

Education and training systems must be prepared to develop skills for the future. In particular, partnership between policymakers, business and training providers are required to ensure adequate supply with demand in the labour market.

➤ Sectoral approach to employment creation (incl. industrial policies)

As Viet Nam will increasingly witness the impact of technological change at the workplace, the effects will vary considerably across sectors.

An effective development strategy calls for expanding sectors that generate more value-added and employment, with large multiplier effects and upstream and downstream linkages to the domestic economy. The importance of industrial and other sectoral strategies for structural transformation could be reasserted in light of the national, regional, and global developments.

The new growth model would need to be, in order to be inclusive and sustainable, built around higher technological value-added and productive sectors that nurture quality employment and other qualitative dimensions of the domestic economy.

➤ The importance of labour market governance

Viet Nam could increasingly compete in global markets based on higher productivity and better working conditions. But translating productivity growth into better wages and higher living standards requires effective labour market institutions, which include effective legal protection of workers' rights in various forms of employment, representation of workers' voice, and collective bargaining. Effective industrial relations is a key for stability, productivity and equity, which will ensure sustainable and inclusive development.

➤ Active labour market policy and social protection

With accelerated changes under IR.4.0, workers who are more frequently moving from one job to another will need to be supported. Effective 'active labour market policies' that help to connect people with jobs are important to constantly help workers to develop new skills; ensure smooth transition from one job to another; provide skill training and unemployment insurance during the gaps between the jobs. Only with proper social protection, including unemployment insurance, workers' move from lower to higher productivity sectors and jobs will be facilitated.

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