



European
Commission

THE CHANGING NATURE OF WORK

AND SKILLS IN THE DIGITAL AGE

EXECUTIVE SUMMARY



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Social media manager, Airbnb host, influencer, SEO specialist, app developer, Uber driver, driverless car engineer, podcast producer and drone operator; these are just some of the jobs that did not exist 10 years ago. What will happen in the future? What will today's 10-year-olds do when they are 25? What kind of jobs will disappear, what will be created and why? Which new skills will be valuable in the job market? What new forms of work are emerging?

In the European Union (EU), the technological revolution is causing significant changes in the world of work. Some jobs are at risk of being lost to machines. Others are being transformed and new ones are being created. As a result, the skills we need are also changing. At the same time, new forms of employment are on the rise. Occupational structures are shifting, often leading to polarisation in employment and wages which in turn, can increase inequalities.

Some jobs are highly vulnerable to automation.

The jobs that are most exposed to automation appear to be those that require relatively low levels of formal education, those that do not involve relatively complex social interaction and those that involve routine manual tasks.

Technology also creates new jobs.

New jobs related to the development, maintenance and upgrading of artificial intelligence (AI) technologies and big data infrastructures are among those expected to grow. Yet, it is difficult to know in advance how many jobs like these will be created, and in what sectors they will emerge. Nevertheless, the kinds of jobs that are predicted to grow the most in the EU-28 by 2030 appear to be those that require higher education, intensive use of social and interpretative skills, and at least a basic knowledge of ICT.

However, new technologies affect tasks, not jobs. This explains why **digital technologies do not simply create and destroy jobs: they also change what people do on the job, and how they do it.** Job profiles could change substantially through the addition of new tasks or the modification of existing ones, requiring workers to adapt to new working methods, work organisation and tools. For example, the use of computers in the workplace has already had an impact on the nature of work: it appears to have shifted employment towards jobs with less routine and more social tasks. At the same time, computerisation has made work in certain jobs more repetitive and dependent on production targets and quality standards. This standardisation of work may pave the way for automation in the future.

“New technologies will reshape millions of jobs in the EU.”

Human-centred work organisation is the ultimate barrier to job automation. The aspects of work that require key attributes of human labour, such as creativity, full autonomy and sociability, are beyond the current capabilities of advanced AI. However, when work is organised in a discrete, standardised and predictable way, the automation of work becomes far more feasible.

Therefore, any reconfiguration of jobs due to the new technologies will entail the adaptation, shifting and modification of roles — and thus, skills and knowledge. What are the implications of these changes in terms of skills and education?

In future, it is likely that **a moderate level of digital skills combined with strong non-cognitive skills will be in greater demand.** The growing importance of both digital and non-cognitive skills is reflected in increasing wage differences between workers who are equipped with these skills and those who are not.

Yet, the digital skills shortage remains significant.

One third of the EU labour force has no or almost no digital skills. Employers in the EU report that a large number of workers are not ready to respond to the rising demand for digital skills.

“Digital and non-cognitive skills *are becoming increasingly necessary to seize emerging job opportunities.*”





Workers will need non-cognitive skills to cope in an ever-changing workplace. It is increasingly important that, in addition to knowledge, individuals acquire skills that help them to anticipate changes and to become more flexible and resilient. For low-skilled workers in particular, in the future, it will be harder to find employment without prior reskilling or upskilling. However, teaching non-cognitive skills seems to have been neglected across the EU despite its effectiveness.

But most importantly, **the faster-evolving world requires change in the way that skills are provided.** Europeans will need to learn throughout their entire life, both inside and outside of formal education.

Disaggregation of work into specific tasks is happening across all Member States, to varying degrees.

Technology provides incentives for employers to contract out work, and enables workers to work remotely, both as employees and freelancers. In fact, new forms employment such as casual work, ICT-based mobile work, and digitally-enabled forms of self-employment are gaining traction across the EU.

Platform work remains small but significant in the EU, involving many young people and highly educated workers. Around 11% of the working age population (aged 16-74) have provided services via online platforms at least once — up from 9.5% in 2017. However, providing labour services mediated by platforms is the main work activity for only 1.4% of the working-age population. The average age of platform workers is just below 34 years, while close to 60% of those who provide services on platforms as their main job have at least tertiary education.

“Technology
is a key driver
of new forms of work.”

Platform work is a clear example of how digital transformation can offer new job opportunities while creating policy challenges. Working conditions for platform workers vary greatly depending on the type of work, its intensity and frequency. For instance, platform workers who predominantly provide professional services are typically better paid than other platform workers, although also more likely to suffer from stress. Conversely, non-professional online platform workers, while experiencing less stress, are more likely to have lower pay and limited learning opportunities. Meanwhile, platform workers are at a particularly **high risk of having unclear employment status.**

Last but not least, there are significant differences between Member States as regards the prevalence of platform work, which demonstrates the importance of local- and regional-level analysis beyond EU-level averages.

Technological change contributes to transforming the overall structure of employment. However, the various patterns of employment restructuring across EU countries and regions suggests that, beyond technology, many other factors, including urbanisation, deindustrialisation and labour-market institutions, are at play.

Patterns of employment restructuring vary considerably among EU regions.

Looking at changes in job structures across EU regions between 2002 and 2017, no prevalent pattern of employment transformation emerges. Around one third of regions have experienced heightened job polarisation. However, at the same time, there has been a remarkable occupational upgrading in some mainly rural regions while, in many others, the labour market structure has been significantly downgraded.

Capital city regions show a much larger share of high-paid jobs than other regions within their respective countries. They are also more likely to experience job polarisation. This is the result of a long-term trend which has seen capital city regions, and more generally highly urbanised areas, benefiting disproportionately from employment growth, mostly in the highly-paid segment. Meanwhile, the employment structure of peripheral European regions is not converging to that of central and northern Europe. For instance, the share of low-paid jobs in some peripheral regions is around twice as large as in core EU regions.

“The employment landscape is evolving differently across the EU *widening the gap between regions.*”



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