



Use of technology and working conditions in the European Union

Executive summary

Introduction

The fourth *European Working Conditions Survey* (EWCS) conducted in 2005 by the European Foundation for the Improvement of Living and Working Conditions (Eurofound) addresses topics that figure high on the European Union's employment policy agenda. The overall aim of the EWCS is to provide an overview of the state of working conditions throughout Europe, and an indication of the extent and type of changes affecting the workforce and the quality of work. Following the 2005 survey, Eurofound carried out further in-depth analyses of its findings on key themes relating to working conditions in the EU. The relationship between the use of technology, working conditions and the health and well-being of workers in Europe was one of the themes explored.

The research looked at four different categories of technology used in workplaces – machinery, computer, machinery and computer, and no technology – in order to gauge their influence on working conditions and health outcomes. It then examined the trends in technology use in different economic sectors and countries over the period 1995–2005, while also considering the role of work organisation in this regard. This leaflet summarises the main challenges posed by the different types of technologies used at work and presents a snapshot of the main results of the research.

Policy context

Technology plays a significant role in workplaces. It not only enables the direct production of goods and services, but it also facilitates communication and innovation processes. Innovation is one of the main pillars of the knowledge-based economy, and Europe is committed to becoming 'the most competitive knowledge-based economy in the world' as set out in the Lisbon Strategy. Thus, the use of technology and uptake of new technologies – such as information and communication technologies (ICT) – is increasingly important. Economies

with a skilled labour force are better able to create and make an effective use of new technologies. In its microeconomic and employment policy guidelines, the European Commission encourages investments in human capital through better education and skills, in order to increase the adaptability of workers and companies, as well as the flexibility of labour markets.

However, some concerns have emerged that the benefits and costs of technology use are unevenly distributed between different parts of the EU and also among its citizens. Equality concerns relate to whether the complexity and the cost of new technologies will widen the gaps between industrialised and less developed areas, between young and older people, and between those having enough knowledge and skills and those who have not. These concerns call for a country and sector-specific approach in following the EU policy guidelines of the Lisbon Strategy.

Key findings

With the ongoing changes in technology use, the nature of work is changing and so are the demands and requirements placed on workers. The study findings reveal that it is not so much the technology itself but rather the working conditions associated with the technology used at work that cause higher risks to workers' health and well-being.

Users of machinery, who account for almost a quarter of all workers in the EU, have less favourable working conditions than workers who use computers and those who do not use technology at the workplace. People working with machines run a higher risk of developing musculoskeletal disorders and work-related stress symptoms, and therefore report relatively low job satisfaction. Such symptoms, in turn, can be attributed to the high work intensity, the lack of learning opportunities in the job and significant ergonomic risks that machine users face.

Computer users, on the other hand, enjoy better working conditions and show higher levels of job satisfaction. Therefore, they have greater chances of being in better health than workers using machines. However, two work organisational characteristics – working in autonomous teams and high task autonomy – appeared to ease the negative effects of machine use at work, increasing the level of learning opportunities and lowering the risk of developing stress symptoms.

In all age groups, women report greater use of computers at work than men. This gender difference in computer use is not related to differences in education or in the distribution of men and women across the sectors of activity. Women's greater use of computers at work can rather be explained by the fact that men and women have different occupations and/or work at different occupational levels.

There is considerable evidence of a machine–computer divide between the eastern and continental European countries in particular, and between the various sectors of activity. In general, machine use is most common in the agriculture and fishing, manufacturing, mining and construction sectors, and among workers with low educational qualifications. Conversely, computer use is more common for highly educated people and in sectors such as financial intermediation, real estate, and public administration and defence. The use of machines at work is particularly widespread in eastern and southern European countries, while the Scandinavian and continental European countries show the highest proportion of workers using computer technologies such as email and internet at work.

Trends in technology use in the EU27 between 1995 and 2005 show an increase in computer use and a decrease in technology-free work situations and machine use. This trend is found for both men and women in all age groups, but not for all countries within the EU27 – the eastern European countries, as well as the latest accession countries Bulgaria and Romania, are at an earlier stage of technological development than the continental European countries, the Netherlands and the Scandinavian countries.

Overall, in terms of trends related to the skills that are used in jobs, the proportion of unskilled work – that is,

monotonous, repetitive work – is highest and continues to increase in the southern European countries, while the share of skilled work – that is, non-monotonous, non-repetitive work remains low and is declining in these countries. The Scandinavian countries and the Netherlands, on the other hand, have a relatively high and increasing proportion of skilled work, while the share of unskilled work is relatively low and decreasing. Eastern European countries show a decrease in both 'skilled' and 'unskilled' work.

Policy recommendations

- An increase in the uptake of new technologies and of computer technologies in less computerised regions could promote better working conditions across Europe. As the observed trends in technology use are different between countries and sectors, a country and sector-specific approach should be adopted in implementing the microeconomic and employment policy guidelines of the Lisbon Strategy.
- Because the use of computers is associated with higher skill levels, technological change could favour high skilled workers to the detriment of lower-skilled workers. To avoid such a polarisation of the labour market, it is crucial to implement the Lisbon Strategy's policy guidelines regarding new occupational needs, key competences and future skills requirements by improving the definition and transparency of qualifications, their effective recognition and the validation of non-formal and informal learning.
- Greater attention should be paid to working conditions and work organisation in general and machine users in particular. Policies fostering interventions in terms of work organisation such as the promotion of autonomous team practices could be beneficial and positively impact on workers' health and well-being.
- Improving autonomy at work is considered an important 'job resource', which can compensate for the negative effects of job demands on workers' health and well-being.
- Fostering the uptake of new technology may impact positively on work organisation, thus also promoting flexible forms of work organisation.

Further information

The report on *Use of technology and working conditions in the European Union* is available at <http://www.eurofound.europa.eu/publications/htmlfiles/ef0863.htm>

The fourth European Working Conditions Survey report and secondary analysis of survey data are available on the European Working Conditions Observatory website: <http://www.eurofound.europa.eu/ewco/surveys/>

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