


ICT specialists: wanted throughout Europe!

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Why Skills Shortages?

During times of economic crises, where business activities remain at lower than usual levels, one would expect that skills shortages should not be an issue as unemployment is high, and thus the available supply of labour should without problems meet the demands of the labour market.

However, there are various reasons as to why some vacancies still remain unfilled or, at least, difficult to fill. In theory, faced with a shortage of labour, employers will increase wage levels to attract more workers in the occupation. In practice however, there is a number of reasons why this is easier said than done in practice. Labour markets' characteristics in particular may slow down the matching process. For example, increasing the wage level in one occupation would lead to a decrease in the productivity of other occupations whose workers will now have to work for a lower wage. In addition, increasing wages for new entrants will have an impact existing workers who would not be happy to do the same job for less while the firms cannot afford to increase everyone's wage. On top of the above, there is an array of socio-economic and institutional barriers to mobility across sectors, occupations, and countries not allowing any potential supply of skills to easily and quickly move to parts of the economy in which shortages exist.

Persistence of skills shortages does have various negative effects not only on the economy and the firms but also on individuals. For instance, unfilled vacancies or vacancies filled with mismatched workforce withhold productivity impacting economic performance of the firms and on the economy as a whole. At the same time, firms need to increase spending when recruitments are unfruitful and to train workers with significant skill gaps. Moreover, employees may see their workload increase when a post remains vacant for too long, leading to increased levels of stress, having again in turn, has a negative impact on the productivity. In parallel, significant is the impact on the workforce which, when remaining unemployed, sees its skills being obsolete or not relevant, affecting future employability even further.

Thus, knowledge of areas of the economy where skills shortages exist is a crucial source of information for policy makers who can direct their efforts towards mitigating them so as to boost the economy while reducing unemployment. Furthermore, understanding the reasons behind the shortages is an additional asset in such efforts.

ICT specialists on top of the list!

On the top of the EU skills' shortage list, as can be seen in the figure below, are found ICT specialists.

This does not come as a surprise. However, in order to allow for efficient policy interventions one has to assess the particular reasons behind the shortage in each country so as to find the appropriate “cure”.

In general, ICT skills’ shortages are linked to the fact that the EU economy and labour market is going through a digitalisation where e-skills are needed across all sectors. Moreover, the rapid changes taking place within the ICT sector make computer skills obsolete very fast and have, thus, created a dramatic shortage of ICT specialists that are familiar with the new advances. The development of big data, cloud computing and open sources activities are often seen as the main drivers of job growth in the digital economy.

At the same time, the supply of ICT professional is low, among other reasons because efforts to attract females into such professions have been so far vastly unsuccessful. Nevertheless, even though such general causes are observed across countries there also causes linked to specific national contexts. For instance, in some countries, typically Eastern European, shortages are more acute because they attract foreign direct investments and have become hubs of ICT outsourcing increasing even more the demand for ICT specialists, while at the same time the same countries tend to “lose” such workforce to countries that offer higher pay. In other cases, shortages for ICT specialists relate to the insufficient numbers of graduates coming out from relevant educational programmes. Such is the situation in the Netherlands where it is observed that the outflow of graduates is too low to cover the demands of the labour market. This phenomenon is also attributed to the slow responsiveness of the educational systems to the needs of the labour market. In Italy, for instance, it is recorded that only few educational institutions offer relevant training programmes.

However, even in cases where the number of ICT graduates is considered to be adequate, there is a tendency of employers to consider that the skills acquired during education are not meeting the demands that the digital era calls for. Such is the case of Estonia, where even though there is no evidence of shortage in the numbers of graduates, employers argue that the education system does not provide the relevant practical skills needed in the work context. Moreover, this observation does not only refer to the specialized, practical skills, but also to transversal skills that nowadays ICT specialists need to possess. For instance, in Romania it is noted that learning curricula and teaching methods are not up-to-date enough so as to equip ICT graduates with appropriate entrepreneurial and management skills.

Cedefop’s innovative approach on prioritising mismatch occupations

When it comes to measuring skills shortages in practice, things are far from straightforward. The reasons behind these difficulties are both theoretical and practical. To elaborate, neither the term “skills” nor “shortage” are precise enough, and are usually proxied by various measurements and concepts, while reliable and consistent data are often scarce. Nevertheless, various attempts have been made mainly focusing the attention around occupational groups (instead of, for example, particular skills or capabilities) as the main unit of measurement. Traditionally, these efforts are built around quantitative indices or qualitative, expert, assessment of the needs of the labour market. In some cases, such as in Australia and the UK^[1], multidimensional approaches have recently been developed. Furthermore, the

studies at an international level are even scarcer, mainly due to difficulties related to data availability.

In order to fill in this gap in research and assist policy makers, Cedefop has developed an innovative **risk-based approach** to identifying skills shortages (and surpluses) according to the need to be prioritised by policymakers. The approach has used international data in order to construct comparable indicators known to reflect skill mismatches in the labour market across all Member States and occupational groups within. However, its real strength is that it has combined this **quantitative analysis** with **qualitative insights** by country experts, who have utilized their knowledge of their country's labour market to refine the list of occupational skills shortages (and surpluses). Using this approach, mismatch priority occupations (MPOs) for each of the EU 28 Member States have been identified. Each country's report does not only list the occupations that have been prioritized but also discusses the reasons underlying these mismatches and any attempts that are currently made to tackle them. The analysis has been conducted with a view of the near future so as to capture foreseen changes in skill needs.

Further details and insights about Europe's skills shortages (and surpluses) can be found in Skills Panorama new series of Analytical Highlights on [Mismatch Priority Occupations](#)

A summary of the results can be read in Cedefop's Briefing note [here](#) while the full list of by Member State can be found [here](#).

For further information about the study please contact Cedefop expert [Ilias Livanos](#).

The infographic features a central illustration of a man in a white shirt and blue tie, holding a lightbulb, a megaphone, a document, and a server rack. The background is dark blue with white and light blue text.

Mismatch priority occupations

European Union

Shortage occupations	Surplus occupations
ICT professionals	Building and related trades workers
Medical doctors	Labourers in mining, construction, manufacturing and transport
STEM professionals	Plant and machine operators
Nursery and midwifery (associate) professionals	Elementary occupations
Teachers	Quartermasters and related occupations

[i] Mavromaras, K., Healy, J., Richardson, S., Sloane, P. Wei, Z. and Zhu, R. (2013) *A System for Monitoring Shortages and Surpluses in the Market for Skills. Final Report to the Australian Workforce and Productivity Agency (AWPA)* by the National Institute of Labour Studies (NILS).

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