



Human capital leveraging digital transformation

Digitalisation is more than a technological change that companies are undergoing. It brings a paradigm shift in the way organizations manage and create value from information, and involves profound changes in processes. As such, understanding the way people organise and act, in the labour market and within each company, is essential for assessing the effects of digitisation. There's a true revolution going on in the mind set of professionals, as an adaptation required to address new corporate scenarios unimaginable until now. The qualification for these changes, and for the new roles in the labour market, and in organizations, call for training/qualification and development of specific skills.

The debate about the investment in human capital and the development of skills highlights the speed of change and innovation, technological convergence and the co-responsibility of public and private actors in creating and/or attracting the **talent needed to compete**

To meet the challenges of the digital world and that allow them to take full advantage of all its advantages and minimise its disadvantages. The contribution of Aveiro Labour Observatory is key here.

Aveiro Labour Observatory, while collecting and analysing information on competence and qualification/training needs in Aveiro, also supports the development of training aligned with the identified needs. Moreover, it develops knowledge about the local labour market and the impacts from digital transformation for the territory. According to the companies in the region already addressed by the Labour Observatory through workshops, interviews and questionnaires, digital competences are pointed out as necessary across all areas/departments and functions of the companies, being transversal to the companies.

Companies highlighted that transversal competences (e.g. soft skills, which are mental, emotional or which are not associated with technical areas, yet necessary

for the implementation and digital transformation) are equally, or more important, than technical competences (also called hard skills, i.e. directly associated with the operationalization of the technologies). According to the opinion of most of the representatives of the companies surveyed, the training in technical competences offered in the region of Aveiro is of great quality. However the current training in transversal competences, is found to be more incipient and in need of, inevitably, being reinforced as they are pointed out as critical for the performance of professionals in digital transformation.

The investment in training for technical and transversal competences for digitalization highlighted as growing, and in a very significant way, according to the companies surveyed. Since training in digital competences is a necessity transversal to all areas/departments and functions, the development of training plans should also be transversal and therefore directed to all employee profiles.



Skill needs in Aveiro: the voice of ITCE companies

During the months of April, May and June, the Labour Observatory research team interviewed representative companies from Aveiro in order to get to know their vision about their digitalization strategies. Interviews also addressed their qualification/requalification needs, linked to those strategies, and aimed at the adoption and sustainability of new technologies.

Companies from the sector of ITCE highlighted the importance of software, hardware and firmware professionals. The level of quality of the formal training of these professionals is acknowledged as being of great quality in Aveiro. However companies identify shortages in the supply of such professionals in the region. Still regarding software and hardware professionals, the companies highlighted special difficulties in finding those who master specific and more recent programming languages (e.g. Ruby on Rails, Golang, Python or TensorFlow from Google).

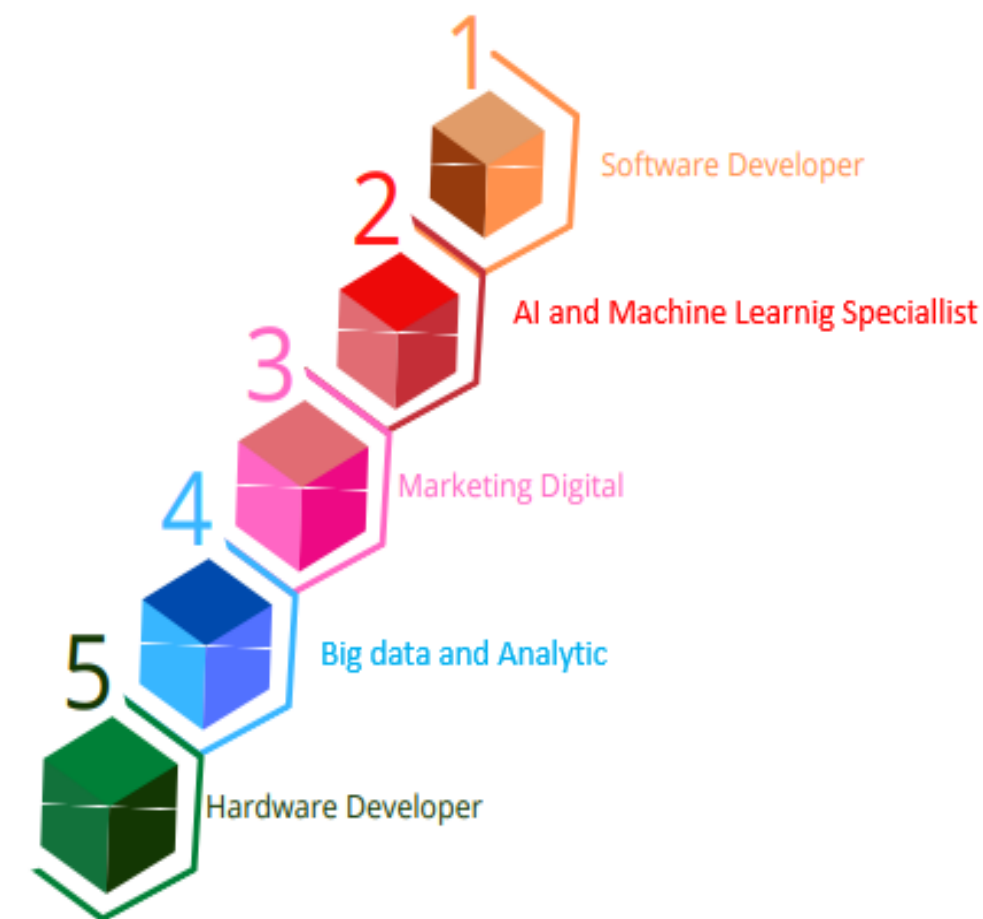
This difficulty extends to finding professionals who can provide training in these areas. What makes this area of programming more complex, justifying the difficulties pointed out by companies, is the pace at which new programming languages appear on the market, often every six months. It was also pointed out in this context that competences such as adaptability or autonomous learning become essential to overcome this deficiency in the technical competence required of software developers. Therefore, companies have often identified the need for hybrid professionals, with technical competences of software and hardware as well as highlighted transversal competences of autonomous learning and communication as the most

Other needs highlighted include digital marketing competences and digital knowledge in the commercial areas, including competences for the development of new business models and internationalisation, based on digitalisation.

Figure 1 shows the ranking of technical competences according to the vision of the companies in Aveiro surveyed by the Labour Observatory. The related occupations can be found in the ESCO - European Skills/ Competences, Qualifications and Occupations, it is important to point out that the ESCO it sometimes defines 2 or more occupations related to

each technical competence. The ranking of the technical competences pointed out as the most relevant for the regional market of Aveiro, puts the Software Developer at the top, followed by the AI and Machine learning Specialist and the Digital Marketing. The identification of these competences can be the great opportunity for a professional who wants to invest in his specialization, or in his training or requalification, either to stay in the same company or to start a new function in another company.

Figure 1-Ranking the most relevant competences for the market in Aveiro



Source: Adapted from the Report on the Identification of Gaps and Qualification Priorities in the Context of Digital Transformation (2020).

Did you know...?

The DESI - Digital, Economy and Society Index , monitors progress in the EU Member States in five main areas, namely connectivity, human capital, private internet usage, business integration of digital technologies and public digital services.

Further progress in the area of **digital competences** in the human capital dimension is identified as necessary. In particular, the crisis caused by Covid-19 has demonstrated the importance of these skills for citizens to access information, services and even work. According to DESI almost half of the EU population (about 42 %) still lacks basic digital competences.

In 2018, some 9.1 million people were working as ICT specialists in the EU, an increase of 1.6 million people in 4 years. 64 % of large companies and 56 % of SMEs that recruited ICT specialists in that year identified that they had experienced difficulties in filling these vacancies. This indicator shows that there is some shortage in the supply of digital competences at both basic and advanced levels.

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As far as Portugal is concerned, in the **human capital dimension** of IDES, we rank on 23rd out of 28 Member States and score significantly below the EU average. In 2017, half of the Portuguese population lacks basic digital competences and around 30% did not have any digital competence (the EU average being 43% and 17% respectively). This is largely explained by the fact that many people have never used the Internet, according to the same source.

Moreover, Portugal still has one of the lowest shares of professionals with ICT skills in total employment in the EU, 2.2 % in 2017 compared to an EU average of 3.7 %. Similarly, the share of ICT specialists in total employment of women is approximately half of the EU average and the share of ICT graduates in the total number of graduates is also very low by the standards of the EU average.

Figure 1— Digital, Economy and Society Index - Human Capital (Portugal)

	Portugal			EU
	DESI 2017	DESI 2018	DESI 2019	DESI 2019
	Valor	Valor	Valor	valor
At least basic digital skills	48%	50%	50%	57%
% individuals	2016	2017	2017	2017
Above basic digital skills	28%	31%	31%	31%
% individuals	2016	2017	2017	2017
At least basic software skills	52%	55%	55%	60%
% individuals	2016	2017	2017	2017
ICT specialists	2,3%	2,4%	2,2%	3,7%
% total employment	2015	2016	2017	2017
Female ICT specialists	0,7%	0,8%	0,7%	1,4%
% female employment	2015	2016	2017	2017
ICT graduates	1,2%	1,2%	1,2%	3,5%
% graduates	2014	2015	2016	2015

Source: DESI—Human Capital

Next activities !

Under the objective of identifying qualification needs and priorities in the context of digital transformation in Aveiro, the ALO is conducting the survey "Qualification needs associated to digital transformation" addressing local Industry and ICTE companies. This survey will later be applied also to enterprises in the Tourism sector.

The initial responses to the survey provided by the management/administration representatives of the enterprises suggest that **Automation and Programming** is perceived as the most important competence in the Industry sector and **Machine Learning Algorithms** as the most important in the ITCE sector, in the current context.

We would like to extend the invitation to more companies in these sectors in Aveiro to collaborate with us in this information gathering. What about your company? What are the qualification/requalification needs? Collaborate in this survey using the link: <https://forms.gle/i8dmwTsqG5rvsZmb9>. All the participations are essential!

The Labour Observatory launches in June the **Report on the Identification of Gaps and Qualification Priorities in the Context of Digital Transformation**. This publication is aimed, namely, at education and training entities, as well as companies and all citizens seeking information for the development of qualifications compatible with the technological trends predicted for the territory in the near future. The report provides guidelines that may be decisive for the delimitation of the local strategies, about the qualification priorities for Aveiro labour market, based on the vision provided on the hiring difficulties and skills of the companies representing the territory in ITCE, Industry and Tourism sectors.

In the month of June it was also launched the Labour Observatory page in LinkedIn. Thought to be one more source of information about the activities of the Observatory, in this page you can find the themes about digital competences for the labour market in the region developed by the Labour Observatory, as well as the results of the activities developed with companies in the ITCE, Industry and Tourism sectors. You can also access monthly newsletters and other publications, as well as the dissemination of results and reports, and all the info that is continuously updated in the Observatory web page: <http://observatoriodoemprego.web.ua.pt/>.

More information at <https://www.linkedin.com/company/observatorio-emprego/>



To learn more about the Urban Innovative Actions: <https://www.uia-initiative.eu/en/uia-cities/aveiro>

To learn more about the project: <https://www.aveirotechcity.pt/pt/atividades/observatorio-do-emprego>

Would you like to receive more information? Register and receive the newsletters: observatoriodoemprego@ua.pt

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