Analysis of the Digital Skills in the Eu Labor Market. a Case Study of the Banking Sector.

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Abstract

The digitisation of the economy has been a global trend in the last decade and more significantly during the last five years. The European Union recognises that digitalisation changes the structure of the labour market, affecting employment and income distribution. Over the last ten years, digital technologies have entered more and more sectors of the European economy. Over 40% of EU workers have been involved in changing and/or replacing the technologies they use at work. Structural changes in the labour market in Europe are closely correlated with the very high demand for advanced digital skills in the coming years.This paper analyses the political, economic, socio-cultural and technological factors affecting the development of digital skills in the European Union (PEST analysis), with a focus on the banking sector.

Keywords: digital skills; digital competences; ICT; labour market; digitalisation

JEL Classification: J24, O14

Introduction

There is no common definition so far of "digital skills" or "digital competences". In the literature, different terms are used, sometimes with different interpretations, with the general understanding that they refer to the skills of using information and communication technologies. They include "computer literacy", "ICT literacy", "digital literacy", "digital competences", "ICT skills", "electronic skills", "technological literacy", "literacy in the media", and "information literacy" (Chinien-Boutin, 2013).

The first definition was "knowledge in ICT" (Fraillon et al., 2013). As information and communication technologies have become more complex and new applications have developed, broader definitions have emerged covering cognitive, behavioural, social and emotional skills. Over time, a series of overlapping (sometimes partial) definitions such as "computer literacy", "internet literacy", "media literacy" and "digital literacy" have emerged (Mutka, 2011). In 2006, the European Commission adopted the definition of "digital competence" as "the critical use of ICT for work, rest, learning and communication", considering digital competence one of the eight key competences for lifelong learning (European Commission, 2006). However, this concept is still fluid, susceptible to change and continuing to expand and change because of the rapid evolution of information and digital technologies (Ilomaki et al., 2011).

Through analysing the literature, three main categories of digital competences can be identified that are used in various models for measuring or developing digital competences. These three categories apply to different types of abilities and users (European Commission, 2017):

a) **basic digital skills** that are, in fact, digital literacy for both personal and work use;

b) d**igital skills related to employment**, which include the basic skills to add the necessary knowledge to the workplace, mainly the use of ICT applications; and

c) **digital competences for ICT professions**, which, in addition to the first two categories, also include the specialised knowledge required in the ICT sector, as well as an innovative component and the ability to develop new digital solutions, products or services.

Digitalisation has just started. The scale and consequences for the whole of European society are impossible to assess with precision. We are truly facing a new industrial revolution that will dramatically change our way of life and the workforce.

The European Commission has grouped digital skills into categories (European Commission, 2018):

digital skills for all—developing digital skills to enable all citizens to be active in our digital society;

digital skills for the labour force—developing digital skills for the digital economy, e.g. upskilling and reskilling workers and jobseekers and giving career advice and guidance;

digital skills for ICT professionals—developing high-level digital skills for ICT professionals in all industry sectors;

digital skills in education—transforming the teaching and learning of digital skills in a lifelong learning perspective, including the training of teachers; and

digital skills for girls and women—taking actions to develop digital skills for women and girls.

In this paper, we focus on **digital skills for the labour force** in the EU-28, with a more detailed view of these competences in the banking sector.

Methodology

The research methodology employed in this paper can be divided into two principal stages:

(1) secondary research. We conducted a thorough review of academic literature. We also reviewed public policies and programmes and market research reports; and (2) data analysis, studying political, economic, socio-cultural and technological factors (PEST analysis).

Factors determining the development of digital skills for the labour market in the EU. PEST analysis

1. Political factors

1.1. EU policies and programmes for digital skills for the labour market

With the digitisation of the economy as a global trend in the last decade and more significantly during the last 5 years, the European Union recognises that "*the digital transformation is structurally changing the labor market and the nature of work. There are concerns that these changes may affect employment conditions, levels and income distribution*"[1].

During the last 10 years, the European Union has launched a series of programmes and political initiatives to boost the digitisation of the economy, only to realise that the area of digital skills and competences for the labour market is lacking. According to the data of the European Commission, "*currently (in 2018-n.a.), 44% of European citizens do not have basic digital skills. 37% of people in the labour force—farmers, bank employees, and factory workers alike—also lack sufficient digital skills, despite the increasing need for such skills in all jobs*"[2].

Consequently, the European Commission issued a number of political documents, programmes and actions aimed at improving the digital skills of the workforce.

In **2008**, the European Commission issued the document "**New Skills for New Jobs**"[3] (COM (2008) 868) because of the growing need for digital competences in Europe. In this document, the European Commission recognises the increasingly important role of digital literacy and basic and advanced digital skills.

In **2010**, the European Commission launched the **Digital Agenda for Europe**[4] (COM (2010) 245), setting out a strategy for the development of a European Digital Europe 2010-2020. The Digital Agenda for Europe outlines what actions need to be taken by the EU, one of them being "Improving Digital Skills, Competences and Inclusion".

In **2013**, the European Commission launched the "**Grand Coalition for Digital Jobs**"[5], a multinational and multisectoral platform, including public and private organisations, companies and education providers with the aim to develop digital competences in Europe and job vacancies in information and communication technology.

[1] https://ec.europa.eu/digital-single-market/en/policies/digital-skills
[2] https://ec.europa.eu/digital-single-market/digital-skills-jobs-coalition
[3] https://ec.europa.eu/social/main.jsp?catId=88&eventsId=232&furtherEvents=yes&langId=en
[4] https://eur-lex.europa.eu/legal-content/EN/ALL/?uri=CELEX%3A52010DC0245R%2801%29
[5] http://www.digitaleurope.org/Our-Work/Projects/Grand-Coalition-for-Digital-Jobs2

In **2015**, the European Commission drew up the strategy for a **Digital Single Market in Europe**[1] (COM (2015) 192), which underscores the need to create, inter alia, an inclusive digital society in which citizens have the digital skills they need to benefit from the opportunities offered by the online environment, but especially to increase their chances of getting a job.

In **2015**, the European Commission also launched **The Digital Competence Framework 2.0**[2] (DigComp 2.0), which identifies 5 key components of digital competence for citizens: (1) information and data literacy; (2) communication and collaboration; (3) digital content creation; (4) safety; and (5) problem-solving. These are basic digital skills individuals should have for personal internet/online use. These skills are also more and more required in the workspace as general "default" competences.

In **2016**, European Commission launched the **Digital Skills and Jobs Coalition**[3], which brings together Member States, companies, social partners, non-profit organisations and education providers to tackle the lack of digital skills in Europe.

In **2016**, the European Commission also launched the **New Skills Agenda for Europe**[4] (COM (2016) 381). This agenda emphasises the importance of developing human capital through the development of digital competences beginning in primary education. It also highlights the need for lifelong learning to prevent lagging behind in terms of skills, especially digital ones, which are constantly developing. The new Competence Agenda introduced the "Competency Guarantee" with the objective of helping low-skilled adults acquire a minimum level of numeracy and digital literacy and/or to access a secondary level of education.

Also in 2016, the European Commission published a communication on **Digitising European Industry**[5] (COM(2016) 180 final). A part of this document discusses digital skills, with a focus on preparing the human capital for the digital transformation of the workforce. Digitalisation is profoundly changing the labour market and the nature of work, with a significant impact on employment, income levels and income distribution.

In **2018**, the Digital Skills and Jobs Coalition launched the following initiatives.

- The **Digital Opportunity traineeships scheme**[6] is a pilot project under Horizon 2020[7] and Erasmus Plus[8], giving students and recent graduates an opportunity to get hands-on training in digital fields such as cybersecurity, artificial intelligence, coding or digital marketing.

- The **European Digital Skills Awards**[9] will recognise initiatives that have improved the digital skills of Europeans at school, at work, for ICT specialists, for girls and women and for society in general. The European Commission is particularly looking for success stories that could be scaled-up and replicated in other cities, regions, countries and sectors.

1.2. Qualifications framework

The **European Qualifications Framework**[10] (EQF) is a common European reference framework intended to make qualifications more readable and understandable across different countries and systems, useful, for example, in cases of professional mobility across EU countries. The core of the EQF is its eight reference levels that are defined in terms of learning outcomes, i.e. knowledge, skills and autonomy-responsibility. Learning outcomes express what individuals know, understand and are able to do at the end of a learning process. Countries are developing national qualification frameworks (NQFs) to implement the EQF.

The **International Standard Classification of Education**[11] (ISCED) was issued by the United Nations International Family of Economic and Social Classifications. ISCED is designed to serve as a framework to classify educational activities as defined in programmes and the resulting qualifications into internationally agreed-upon categories. The basic concepts and

[1] https://ec.europa.eu/digital-single-market/
[2] https://ec.europa.eu/jrc/en/digcomp/digital-competence-framework
[3] https://ec.europa.eu/digital-single-market/en/digital-skills-jobs-coalition
[4] https://ec.europa.eu/social/main.jsp?catId=1223
[5] https://ec.europa.eu/digital-single-market/en/policies/digital-skills
[6] https://ec.europa.eu/digital-single-market/en/digital-opportunity-traineeships-boosting-digital-skills-job
[7] https://ec.europa.eu/programmes/horizon2020/en/
[8] https://www.erasmusplus.ro/
[9] https://ec.europa.eu/digital-single-market/en/news/european-commission-launches-european-digital-skills-awards-2018
[10] https://ec.europa.eu/ploteus/en/content/descriptors-page
[11] http://uis.unesco.org/en/topic/international-standard-classification-education-isced

definitions of ISCED are therefore intended to be internationally valid and comprehensive of the full range of education systems.

While the European Qualifications Framework (EQF) and the ISCED-2011 refer to the levels of education (for example, primary education, secondary education, bachelor's level, master's level, doctoral level), the ISCED-2013 focuses on the fields of education and training. Thus, the banking sector falls under ISCED-2013-04 Business, Administration and Law, 0412-Finance, banking and insurance[1], i.e. "the study of planning, directing, organising and controlling financial activities and services". Nothing is mentioned about the digital competences necessary nowadays for banking and financial activities.

To compensate, banks refer to the certifications issued by the International (European) Computer Driving Licences, but they are general and non-specific to the sector.

European Computer Driving Licence[2] (ECDL) is the European arm of the International Computer Driving Licence (ICDL)[3], a computer skills certification platform offering basic, intermediate and advanced modules. The ECDL programme defines the skills and competencies necessary to use a computer and common computer applications that are most relevant to educational and professional requirements, thereby creating an ECDL profile for the user.

2. Economic factors

2.1. Employment—digital skills of the general workforce

The last decade has pushed digital technologies and digitisation into more sectors of the economy, not only in Europe, but also globally. A recent survey of competences and jobs in Europe, Cedefop (Cedefop, 2018) shows that 43% of EU workers have been involved in changing and/or replacing the technologies they use at work (i.e. machines and systems IT) over the past five years. At the same time, 47% of EU workers mentioned changes in current work patterns and processes, and more than half of the workers in Ireland, Malta, Slovenia, Finland, Sweden and the UK said they were affected by digital changes in their work environment (Cedefop, 2018). These changes have occurred, for example, in the way products and services are made (product/service innovation) and how they interact with customers.

It is true that most of the digitisation changes occurred in the ICT sector (with 57% of jobs being affected by digital technologies). However, digitisation is rapidly spreading to more economic sectors, as the Manika (2015) report found in the United States. A similar study conducted in 2014 by Cedefop in Europe (Cedefop, 2015) shows that roughly the same economic sectors are affected by digitisation in the EU and the United States. Digitisation is global and affects the worldwide economy accordingly, albeit with different rhythms of change.

Approximately one-quarter of EU staff consider that it is likely that over the next five years, their skills and use at work will no longer be up to date. The proportion of employees in this situation varies according to the economic sector in which they work: 29% in the ICT sector, 24% in the financial and insurance sectors and 23% in the professional, scientific and technical services sector (Cedefop, 2018). According to the same study, about 10% of jobs in the EU run a very high risk of becoming irrelevant because of the (digital) skills of employees. The most affected EU countries are Estonia (23%), Slovenia (21%) and Czech Republic (19%) (Cedefop, 2018).

2.2. Digital labour market prospective in the EU

It is estimated that structural changes in the labour market in Europe are closely correlated with the very high demand for advanced digital skills in the coming years. There is a strong correlation between the estimated number of jobs that will increase in the next ten years and the need for advanced digital skills to be applied in these occupations. In a survey conducted by Cedefop in 2015, 71% of EU employees mention that they need basic and intermediate ICT/digital knowledge to carry out their work and 14% of workers say they need advanced digital skills at work (Cedefop, 2018). Among the EU-28 countries, Denmark, Ireland and Sweden are those where over 80% of the workforce need basic digital skills to work, while in Greece, Cyprus and Romania, this percentage is 60% (Cedefop, 2018).

According to World Bank data (2016), the labour market in Europe is characterised by a strong polarisation of digital competence needs, so that whole population groups are virtually excluded from society and the digital economy. Thus,

[1] http://uis.unesco.org/sites/default/files/documents/international-standard-classification-of-education-fields-of-education-and-training-2013-detailed-field-descriptions-2015-en.pdf
[2] http://ecdl.org/
[3] http://icdl.org

some European workforce categories do not really need ICT/digital knowledge to work (56% of workers in simple occupations, 25% of service and trade workers, 33% of workers in agriculture and 29% in hospitality and catering). For these categories of workers, manual skills are much more important. This is related to the use (or lack thereof) of digital knowledge in society. If an individual does not need and often does not use digital skills in the workplace, it is unlikely to require such skills for social activities. This can be explained, for example, by the relatively high percentage of the EU population with low digital literacy or lacking internet use. In particular, some EU population groups, such as the elderly, low-skilled workers and some female workers, do not occupy jobs requiring advanced ICT/digital skills.

To offset the exclusion of certain categories of citizens from the use of information and communication technology and digital technologies, many EU countries have developed and implemented compensatory learning and ICT training programmes, actively promoting digital inclusion and access to ICT. These programmes, however, mainly relate to the development of basic digital competences, and recent studies show that advanced digital skills, especially programming and code writing, will soon become essential requirements for employment (Berger & Frey, 2016). Even now, employees who use advanced ICT/digital skills at work have an hourly gain of about 3.7% more than those who only use basic ICT/digital competences (Cedefop, 2018).

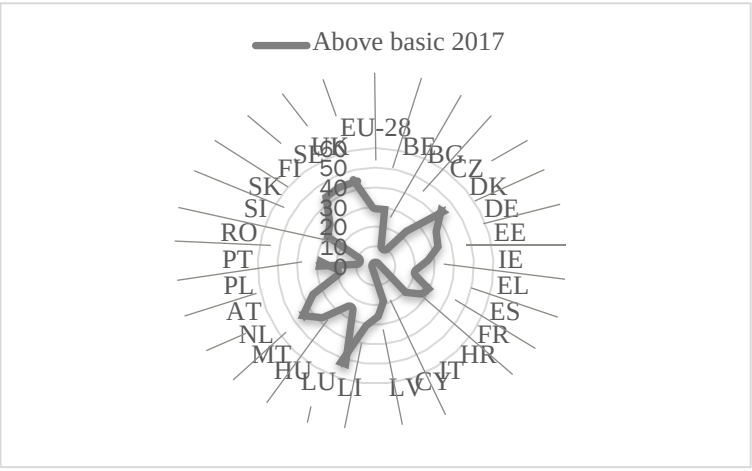
3. Socio-cultural factors

3.1. Education level in the EU with regards to digital skills

The internet and mobile penetration is significant, their use by individuals is important, and there are many education and training programmes in place at European and national levels. However, there are still disparities between the EU Member States in terms of digital skills.

- Individual level of digital skills. According to Eurostat, in 2017, the countries with the highest percentage of their population having above basic digital skills were Luxembourg (55%), Netherlands (48%), Denmark (47%), Sweden and United Kingdom (both with 46%) and Finland (45%) (Figure 1).

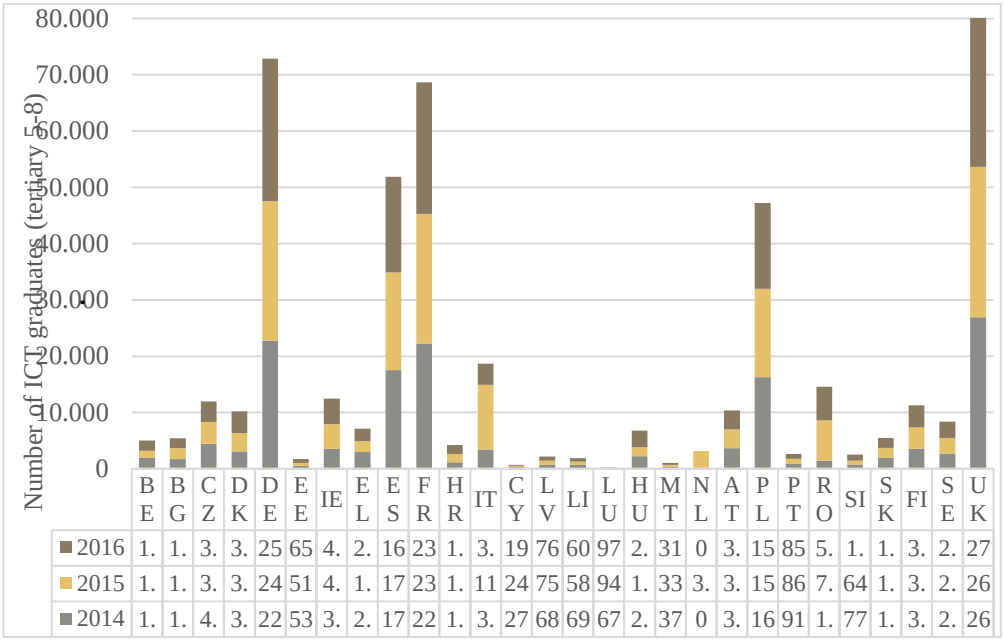
Figure 1. Individual levels of digital skills in 2017



Basic or above basic overall digital skills represent the two highest levels of the overall digital skills indicator measured by Eurostat, which is a composite indicator based on selected activities performed by individuals aged 16-74 on the internet in four specific areas (information, communication, problem-solving, content creation). It is assumed that individuals having performed certain activities have the corresponding skills; therefore, the indicator can be considered a proxy of the digital competences and skills of individuals.

- ICT graduates. Over the period 2014-2016 (the latest data available on Eurostat were recorded for 2016), the EU countries with over 10.000 ICT graduates as a cumulative number over the three years were United Kingdom, Germany, France, Spain, Poland, Italy, Romania, Finland, Ireland and Czech Republic (Figure 2) (Source: Eurostat). The numbers

reflect the graduates of tertiary education levels 5-8, according to ISCED-2011. No data were available in the Eurostat database for Netherlands for years 2014 and 2016.



	BE	BG	CZ	DK	DE	EE	IE	EL	ES	FR	HR	IT	CY	LV	LI	LU	HU	MT	NL	AT	PL	PT	RO	SI	SK	FI	SE	UK
2016	1.	1.	3.	3.	25	65	4.	2.	16	23	1.	3.	19	76	60	97	2.	31	0	3.	15	85	5.	1.	1.	3.	2.	27
2015	1.	1.	3.	3.	24	51	4.	1.	17	23	1.	11	24	75	58	94	1.	33	3.	3.	15	86	7.	64	1.	3.	2.	26
2014	1.	1.	4.	3.	22	53	3.	2.	17	22	1.	3.	27	68	69	67	2.	37	0	3.	16	91	1.	77	1.	3.	2.	26

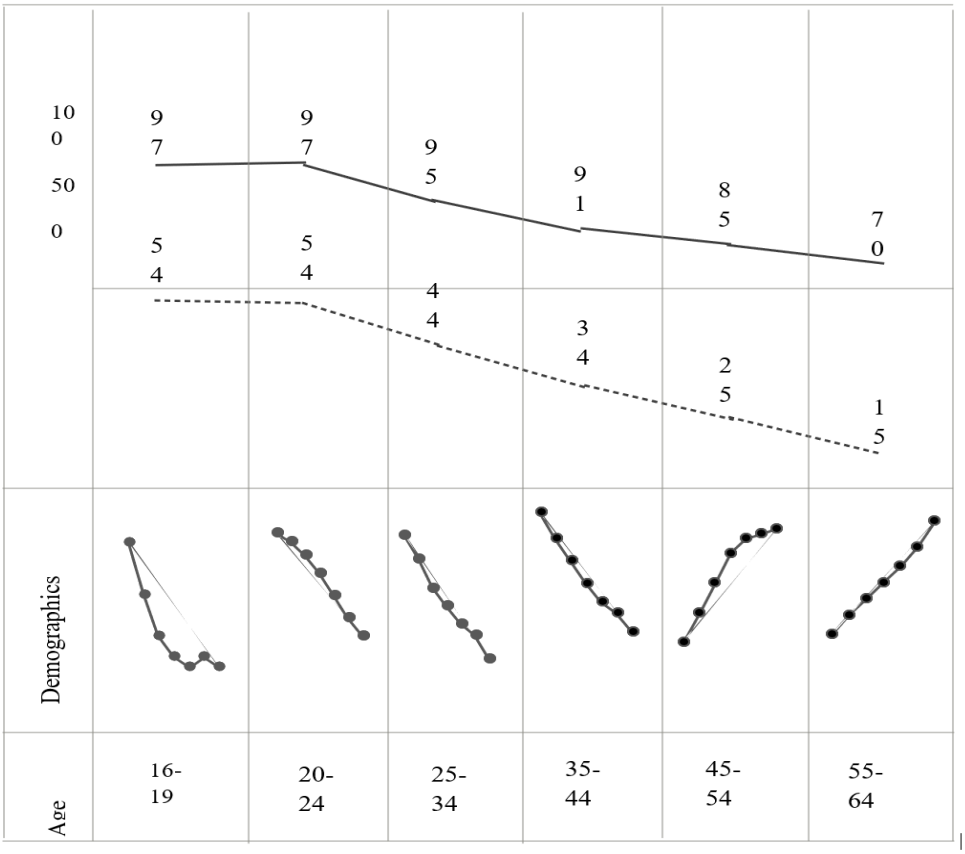
Figure 2. Number of ICT graduates (levels 5-8 ISCED 2011)

A first observation of the data in Figure 2 is that in most EU countries, the number of ICT graduates has increased from 2014 to 2016, in good correlation with younger generations more skilled and more interested in information and communication technologies. On the other hand, when the number of ICT graduates is correlated with the labour market and economic productivity across Europe, it can be noted that some countries do not reap the full benefits of the ICT training and ICT specialists they educated. At a macro level, this phenomenon leads to Europe still lagging in ICT/digital technologies at a global scale.

According to Atkinson (2018), with the emergence and rapid adoption of digital technologies (artificial intelligence, robotics, the Internet of Things), the fact that Europe still lags behind US economic growth shows that ICT—as both operation technologies and skills—are inefficiently used in different EU countries. Moreover, Atkinson says that the adoption of ICT, especially the digital technologies connected to the 4th industrial revolution, is key to fixing Europe's lagging productivity. This cannot be achieved without adequate digital skills and ICT training.

The younger generations possess the highest level of digital skills and use internet the most, but the demography shows that these age groups are shrinking (Figure 3) (Source: Eurostat). The only age groups with increasing numbers are 45-54 and 55-64 years old, those who are still employed and those who face the rapid transition to a digital workplace. However, these demographics show the lowest values in terms of both digital skills and internet use (Figure 3). Based on data from Eurostat, we calculated the demographic evolution for the period 2011-2017. We also calculated the central tendency for individuals with above basic digital skills (as a percentage of the total population) and of individuals using the internet over the last 3 months prior to the Eurostat survey (as a percentage of the total population). The values for the indicators "Above digital skills" and "Internet use last 3 months" are calculated as central tendency (mean).

Figure 3. Synthetic view of digital abilities per age group (2011-2017)



3.3. Attitudes towards digitalisation and digital skills

In 2017, the European Commission published the results of a survey carried out in March 2017 across all 28 Member States about the perceived impacts of digitisation[1]. Some 28.000 EU citizens from different social and demographic categories were interviewed face-to-face at home in their native language. The data collected by the Eurobarometer survey are public, and for the purpose of this paper, we analysed it using the database published on the EU Open Data Portal[2].

- Attitudes towards the digital technologies. Most of the EU citizens surveyed have a positive attitude towards digital technologies and their impact on the economy (75% of respondents), quality of life (67% of respondents) and society (65% of the respondents). The countries that consider that the digital technologies have a very positive impact on the **economy** are Malta (40% of respondents), Lithuania (30% of respondents), Germany, Czech Republic, Slovenia, Cyprus (29% of respondents in each country) and Bulgaria (28% of respondents). We also observed that individuals with higher levels of education have a more positive attitude towards the impact of digital technologies.

- Attitudes towards digital skills. Most respondents (71%) of all countries consider they have sufficient basic digital skills for **daily life activities**. However, only 47% of the age group 55-64 have basic digital skills needed for daily life, compared to 81%-92% among younger respondents.

In terms of digital skills for the **labour market**, most respondents (80%) across Europe consider they have sufficient digital skills to do their jobs. We made here the same observation as for the case of digital skills for daily activities (consistent with

[1] https://ec.europa.eu/digital-single-market/en/news/attitudes-towards-impact-digitisation-and-automation-daily-life
[2] http://data.europa.eu/euodp/en/data/dataset/S2160_87_1_460_ENG

the analysis presented in Figure 3). Only 67% of respondents aged over 55 consider they have enough digital skills to perform their current jobs, compared to 79%-85% of younger respondents.

Facing the necessity of continuous training for updating and improving their digital skills for the labour market, most respondents in the EU (64%) consider themselves sufficiently skilled to benefit from digital and online learning opportunities, with the same notable difference between the age groups: 40% for respondents over 55 compared to 72%-89% of younger age groups.

Younger respondents consider they have appropriate digital skills to be able to change their jobs and use digital technologies in the new jobs (85%-72% compared to 47% of those over 55). Moreover, the respondents with higher levels of completed education feel more prepared and are more confident about using digital technologies in a new workplace (84% of those with the highest education level compared with 40% of those with the lowest education level).

4. Technological factors

4.1. Internet penetration

In 2017, the EU countries with the highest percentage of households having internet access were Netherlands (98%), Denmark and Luxembourg (97% each), Sweden (95%), Finland and United Kingdom (94% each) and Germany (93%) (Source: Eurostat).

4.2. ICT usage in companies

Integration of internal processes. Information and communication technologies (ICT) are increasingly used by organisations in Europe as part of their internal operational processes, such as radio frequency identification (RFID) technologies and/or enterprise resource planning (ERP) software. For example, RFID technologies are used for after-sales product identification or as part of the production and service delivery process, for person identification and access control, for monitoring and control of industrial production, for supply chain and inventory tracking and tracing, and for service and maintenance information and asset management. Enterprise resource planning software is used to share information on sales/purchases with other internal functional areas. Other ICT-type technologies used by enterprises are customer relationship management (CRM) to analyse information about clients for marketing purposes and to capture, store and make available clients' information to other business functions.

An analysis of the use of ICT in companies across Europe in 2017 (all enterprises—10 persons employed or more, not in the financial sector), shows that countries with a high ICT integration in the internal processes are Belgium, Finland, Germany, Spain, Cyprus, Netherlands, Luxembourg and Austria (Table 1) (Source: Eurostat).

Table 1. Enterprises integration of ICT technologies in internal processes (calculated as percentage of enterprises for 2017, 10 persons employed or more, not in the financial sector. No data are available for the financial sector)

Country	RFID	ERP	CRM
EU-28	12	34	33
Belgium	21	54	43
Bulgaria	18	23	19
Czech Republic	8	28	19
Denmark	9	40	36
Germany	16	38	47
Estonia	12	28	24
Ireland	11	28	33
Greece	7	37	20
Spain	15	46	37
France	11	38	28
Croatia	14	26	20
Italy	13	37	31
Cyprus	14	35	42
Latvia	9	25	17
Lithuania	10	47	33
Luxembourg	18	41	39
Hungary	7	14	14
Malta	15	29	26
Netherlands	18	48	47

Country	RFID	ERP	CRM
Austria	19	40	43
Poland	9	26	23
Portugal	11	40	24
Romania	7	17	14
Slovenia	15	30	25
Slovakia	18	31	24
Finland	23	39	39
Sweden	12	31	35
United Kingdom	8	19	32

Integration with customers. Companies engage much more easily and faster with customers by employing ICT and digital technologies. Thus, companies send and receive eInvoices that are suitable for automated processing, and they automatically link their business processes to those of their suppliers and/or customers. Data are incomplete in Eurostat, but from the information available, it is apparent that in 2017, the EU countries that were sending eInvoices suitable for automated processes were Spain (32% of all enterprises with more than 10 persons employed), Lithuania (24%) and Estonia (20%) (Source: Eurostat). No data were available for financial services.

Cloud computing services. More and more companies use the internet as a source for services or delocalised work. Companies can buy cloud computing services from shared servers or service providers, for example, e-mail or office software (e.g. word processors, spreadsheets, etc.). Equally, companies can use cloud computing to buy hosting for the enterprise's database, storage of files, finance or accounting software applications, customer relationship management software and computing power to run the enterprise's own software.

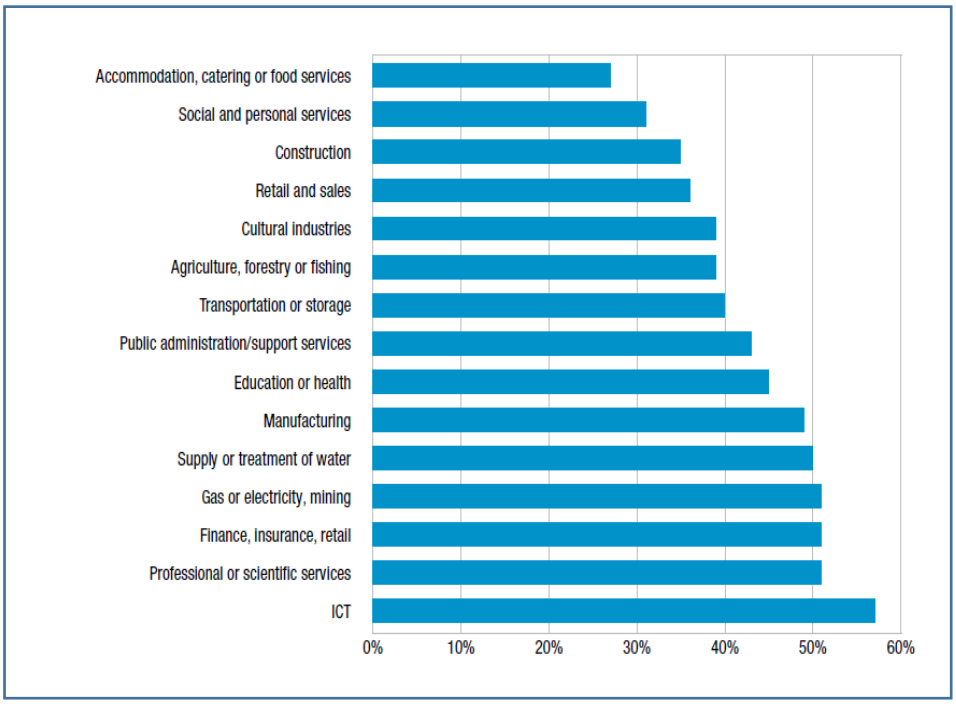
According to Eurostat, in 2018, companies in Finland most intensively used cloud computing (65% of enterprises with more than 10 persons employed, not in the financial sector), followed by Sweden (57%), Denmark (56%), Netherlands (48%) and Ireland (45%). The highest increases in using cloud computing services by enterprises from 2016 to 2018 were registered for Denmark and Netherlands (Source: Eurostat).

Big Data analysis. Nowadays, data are collected from all possible sources. The challenge, in terms of skills and abilities, is how to analyse and interpret them all. Companies can collect and analyse Big Data from any data source or can analyse their own Big Data generated by smart devices and sensors, geolocation of portable devices, social media or other sources. The analysis of Big Data can be done by the company's own employees and/or by an external service provider. Studies show that jobs such as "Big Data manager" or "Big Data interpreter" are very much needed, but they are, in fact, in short supply.

Case study—Digital skills for the banking sector

Regarding the banking sector, both McKinsey (studies in the US) and Cedefop (studies in the EU) show that financial, banking and insurance areas will be strongly impacted by digitalisation not only on the operation side, but mostly regarding their workforce (Figure 4a, b) (Source: Cedefop, 2018; Manika, 2015).

Figure 4a. Economic sectors in which digitalisation determined job changes affecting the workforce



(Source: Cedefop, 2018)

At the April 2018 conference of the international Bank Governance Leadership Network, the banking workforce in the digital era was a priority topic. International bank leaders recognise that emerging digital technologies and applications, especially intelligent automation, are already changing the banking workforce and are expected to have a profound impact within 3-5 years (Tapestry Networks & EY, 2018). Many bank leaders expressed their points of view.

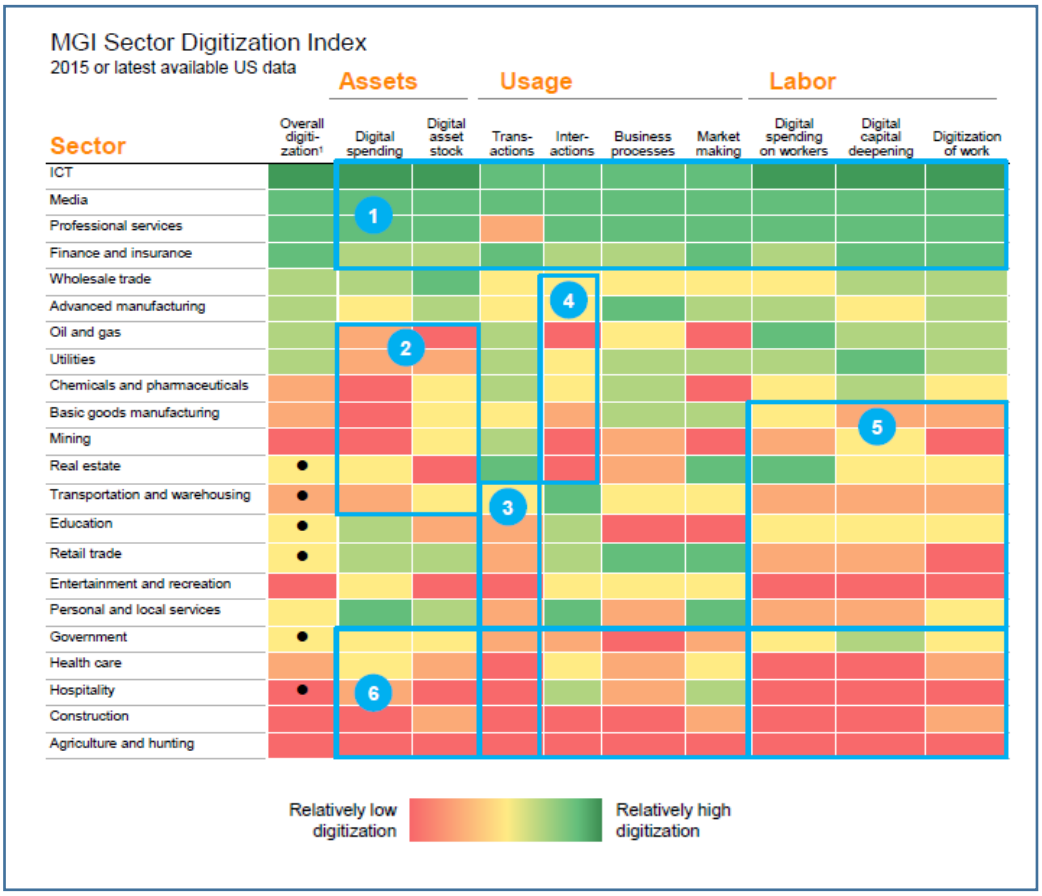
"*There is going to be digitisation of the workforce in a way we have never seen before. In 10 years, probably less, we will have substantially fewer employees, and the ones we do have will be significantly different from what we have now*." (Director)

"*We will not know what the bank of the future will be like until we feel our way there. It is clear, however, that one of the big governors of success will be our ability to bring in tech people and integrate them into the guts of the business*." (Director)

At the global level, banks are using more IT and digital technologies to improve both operating effectiveness and the customer's experience. Consequently, banks will need significantly more technology expertise than they have today. For example, the next challenge for the Australian banking sector is resources; according to Westpac CIO, the biggest roadblock for banks as they shift to digital models is finding the employees to do it (Brookes, 2018).

Finding, hiring and retaining talented and skilled bank workers have become essential to competing and innovating in the global environment. Banks fight for skilled people not only with their traditional sector rivals, such as financial and economic, but also against a new wave of competition from big technology companies and start-ups. Thus, it becomes obvious that the workforce is also changing in the banking sector, and bank leaders and managers are being forced to think differently about strategies to acquire talented and skilled workers.

Figure 4b. Digitalisation of various economic sectors in the US in 2015 according to McKinsey Global Institute



(Source: Manika, 2015)

According to the international bank leadership network, banks are now in the early stages of planning for workforce transformation (Tapestry Network & EY, 2018). Three challenges are considered essential for the hiring strategy: (1) preparing for technology-driven disruptions that could require massive retraining; (2) identifying the skills and expertise needed to compete in the future; and (3) attracting and retaining the people with those skills.

Digital labour market prospective in the banking sector

Due to emerging and invasive technology, the nature of work in general and in the banking sector is changing. The change affects the number of workers that will be needed, the kind of skills necessary for working in banks and the banking career. Traditionally, bankers have followed a straight line up through one business or hierarchy. Nowadays, it is said that "*We fully expect people to have four or five 'careers' within the bank*" (Participant) (Tapestry Network & EY, 2018).

In the banking industry, employment is becoming more fluid. Most analysts expect tenure within any single firm to continue to decline. In the United States, the median tenure in 2016 for workers ages 25–34 was less than three years, compared with more than 10 years for workers in the 55–64 age bracket (US Bureau of Labour Statistics, 2016). Across Europe, there is variation in job tenure by country, but even so, between 2000 and 2014, job tenure for millennials trended downward (European Political Strategy Centre, 2016).

In the near future, bank workers who can perform different functions will be very valuable. In 2018, bank leaders recognised the need to "focus on people, not roles", emphasising the importance of creating agile teams with different mind-sets and skills.

Attitudes towards digitalisation in banks

A PwC survey of approximately 4,000 consumers in the US carried out in 2018 shows a continuously growing trend for online banking activities. In previous years, people were choosing a digital interaction with their bank irrespective of the hardware, i.e. laptop, tablet or smartphone. The survey in 2018 shows, however, that people are choosing to use their smartphones more to digitally interact with their banks, what the PwC report calls "online-dominant consumers are becoming mobile dominant consumers—and everyone else is shifting that way, too" (PwC, 2018a).

According to another study of PwC from 2018, banks are facing a change of customer behaviour towards digital interaction (PwC, 2018b). The shift in consumers' attitudes is determined by factors such as more and better expectations, more information and more choices (PwC, 2018b). However, in addition to the attitude change, banks should consider other factors when designing their digital strategy. For example, people's preference for online and digital activities is globally pervasive. Moreover, generation Y (the so-called "digital natives") are now at the age of choosing their financial service providers, and for them, digital interaction with the bank is a decisive factor.

Conclusions

The scale and consequences of digitalisation for the whole of European society are impossible to assess with precision at this time. We are truly facing a new industrial revolution that will dramatically change our way of life and the workforce. With the digitisation of the economy as a global trend in the last decade and more significantly during the last five years, the European Union recognises that digitalisation changes the structure of the labour market, affecting employment and income distribution.

In the last decade, the European Union has launched many programmes and initiatives to encourage individuals to acquire digital skills necessary for both social and professional life. However, despite all efforts, according to the data published by Eurostat, currently 44% of people lack basic digital skills, while 37% of employees do not have the digital skills that would help them at work.

Over the last ten years, digital technologies have entered more and more sectors of the European economy. As a result, in 2017, 43% of EU workers were involved in changing and/or replacing the technologies they use at work (i.e. machines and systems IT). It is estimated that structural changes in the labour market in Europe are closely correlated with the very high demand for advanced digital skills in the coming years. There is a strong correlation between the estimated number of jobs that will increase in the next ten years and the need for advanced digital skills in these occupations.

The financial, banking and insurance areas will be strongly impacted by digitalisation not only on the operation side, but mostly regarding their workforce. At the global level, banks are using more IT and digital technologies to improve both operating effectiveness and the customer's experience. Due to the emerging and invasive technology, the nature of work in general and in the banking sector is changing. The change affects the number of workers who will be needed, the kind of skills necessary for working in banks and the banking career.

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