

Competence Framework

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Introduction

Digitalisation and digital technologies have brought a long array of possibilities for all of the industries to explore and exploit them to their benefit. The process can cause transformations of key aspects of the industries involved, affecting products, processes, organisational structures and systems as organisations need to adapt themselves to manage these complex transformations. Moreover, companies have the prerequisite to go digital so as to survive and get a competitive advantage. However, though there are multiple technological innovations and strategies for their realisation, whether in business or privately, digital transformation takes longer time and encounters various challenges (João Carlos Gonçalves dos Reis, et. Al., 2018, https://www.researchgate.net/publication/323994364_Digital_Transformation_A_Literature_Review_and_Guidelines_for_Future_Research). It is not a fixed destination but rather a journey toward becoming a digital enterprise, one which is constantly evolving, trying to deploy innovative technologies to upgrade what it offers, how it presents and delivers and how it performs. As such, also digital maturity is an ongoing process, to acquire the advantages of going digital. Naturally enough, the organisations cannot adopt all the changes at once and they need to prioritise certain aspects, depending on their mission as well as the development path (Ragu Gurusurthy, et. Al, Pivoting to digital maturity: Seven capabilities central to digital transformation, Deloitte, 2022, [Digital Maturity Model and Digital Pivots | Deloitte Insights](#)).

To undergo a successful digital transformation an organization is to develop a comprehensive capabilities and skills which may vary depending on the industry and the organisations needs and expectations. Digitalisation and digital technologies should have a key role in how industries operate. In their turn organisations need to rethink and perhaps reinvent/redefine their business, operational and performance models and modus so as to remain competitive and efficient (Carcary, M., et. Al, A dynamic capability approach to digital, transformation—a focus on key foundational themes. In: 10th European Conference on Information Systems Management. Academic Conferences and publishing limited, pp. 20–28, 2016). Moreover, digitally mature companies enjoy multiple subject and industry related advantages due to digital transformation, including improved product and service quality and customer satisfaction, better financial performance and cost efficiency, reduced environmental impact, workforce diversity, etc. (Ragu Gurusurthy, et. Al. 2021, Uncovering the connection between digital maturity and financial performance: How digital transformation can lead to sustainable high performance, [2020 Digital transformation survey | Deloitte Insights](#))

Digital transformation aims for end-to-end digitization of all physical assets and integration into digital ecosystems with value chain partners. Moreover, it seeks to put digital to the heart of business models which is pivotal for the success of any company and is a decisive management aspect. Thus, it is not enough to integrate IT to the culture of the company, the success depends on the processes and operations that management amends. For such a management model, people must be relevantly trained and acknowledge the challenges of the IT (Dremel, C., et. Al., How AUDI AG established big data analytics in its digital transformation. MIS Q. Executive 16(2), 81–100, 2017).

Digital Transformation and Covid-19

When the Covid-19 pandemic unexpectedly struck, the response of most companies was ad-hoc, piecemeal, and reactive. Due to the shutdowns related to the pandemic, information and communication technologies revolved nearly overnight, initiating technology-driven solution to ensure remote work and distance learning. New customer expectations, experiences as well as new online sale and service channels have followed the suit. The pandemic was not just a test in fast-developing technology deployments, it was also a test revealing companies' ability to make employees and customers to integrate the new modes of business engagement and integration (Beth Stackpole, Management Sloan School, 2021, [Digital transformation after the pandemic | MIT Sloan](#)).

What is more, most of the changes will last long after the pandemic, e.g. services provided remotely, teleworking and online meetings. Institutionalisation of digital operations has seriously altered the dynamics of customer and workforce engagement and posed new expectations in experience and work/life balance. Moreover, according to a 2022 State of Remote Work report by Buffer, which surveyed 2118 people from 16 different countries, 97% of respondents said that they would like to work remotely at least some of the time (Kevin Corr & Erin Sanders; Digital Transformation and the Enduring Pandemic: Today and Tomorrow, Cloud Computing, 2022, <https://cloud-computing.tmcnet.com/breaking-news/articles/452124-digital-transformation-the-enduring-pandemic-today-tomorrow.htm>).

To be competitive in the new realities, business and economic environment should deploy new strategies and practices. To this end, the strategic importance of technologies has become a critical component of the businesses, not just a source of cost efficiencies (McKinsey and Company, 2020, [COVID-19 digital transformation & technology | McKinsey](#)).

Thus, the pandemic highlighted the need for digital transformation, making it integral for companies' survival. Investment in digitalisation is imperative in order to prevent business disruption, organising work remotely, improving communication with customers, suppliers and employees and selling products and services online. Covid-19 has also triggered the companies to invest more in digitalization. To this end, 46% of the companies in the EU report that as a result of pandemic they increased/accelerated their digitalization path, e.g. by providing services online. However, there are significant discrepancies depending on the size of the companies, industries and countries. As such, 48% of firms in Western and Northern Europe reportedly have taken steps or invested on becoming more digital, compared with 43% in Southern Europe and 37% in Central and Eastern Europe. On the other hand, during the COVID-19 crisis, companies put more complex digitalisation processes on hold. Unlike more general digital transformation, the adoption of new advanced digital technologies is delayed. Beyond the short-term response to COVID-19, another structural element for the digital transformation of the EU economy is the implementation of advanced digital technologies such as 3-D printing, advanced robotics, the internet of things, big data analytics and artificial intelligence, drones, augmented or virtual reality, or platforms. The share of firms that report having implemented new advanced digital technologies in their business in the past year was lower in 2020 than in 2019. ([Digitalisation in Europe 2021-2022: Evidence from the EIB Investment Survey](#)).

As seen while some areas have rapidly become digital as a result of the pandemic, others have not developed with the same path. Furthermore, the enlarged reliance on digital solutions has increased

the need for privacy and digital security. In the new realities where jobs, education, health, government services and even social interactions are prone to be dependent on digital technologies more than ever, failing to ensure comprehensive and trustworthy digital access and effective use may deepend inequalities as well as hinder countries' efforts to emerge stronger from the pandemic (OECD, Digital Transformation in the Age of COVID-19: building resilience and bridging divides, 2020, [digital-economy-outlook-covid.pdf \(oecd.org\)](#))

Affinity to Digitalisation

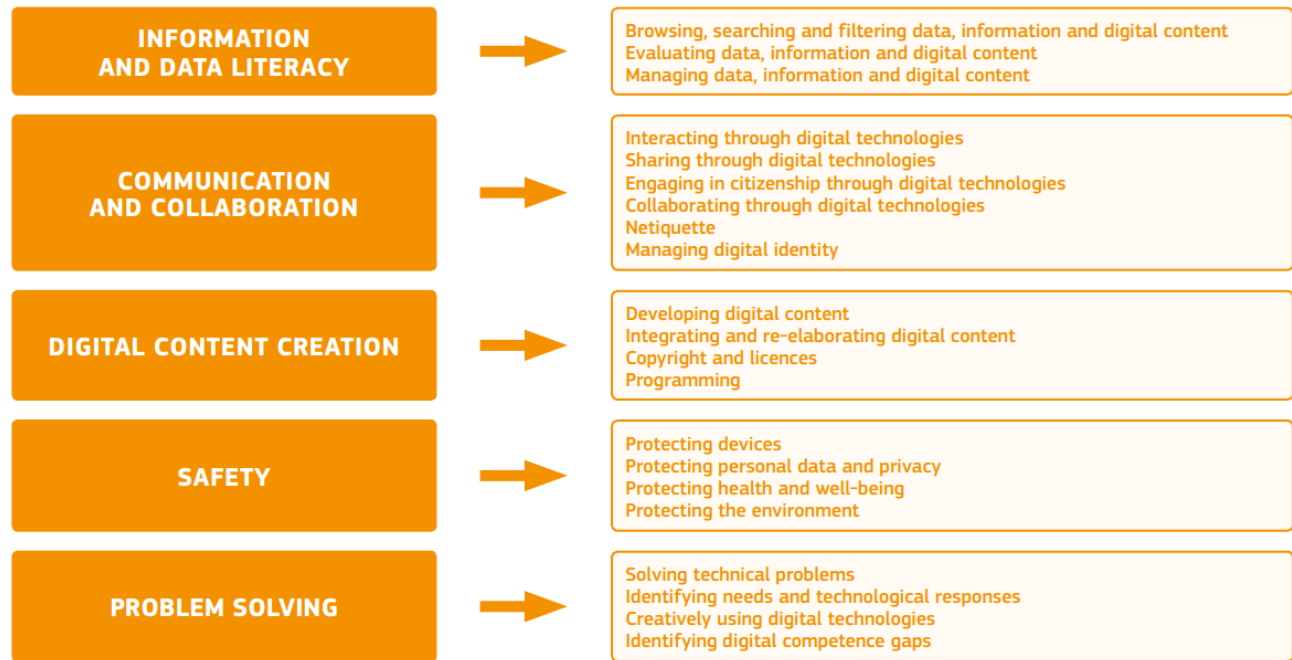
a. Digital Competences and Skills

According to the European Qualification Framework (EQF) "competence means the proven ability to use knowledge, skills and personal, social and/or methodological abilities, in work or study situations and in professional and personal development." They are described in terms of responsibility and autonomy. While sometimes used as synonyms, the terms skill and competence can be distinguished according to their scope. The term skill refers typically to the use of methods or instruments in a particular setting and in relation to defined tasks. The term competence is broader and refers typically to the ability of a person - facing new situations and unforeseen challenges - to use and apply knowledge and skills in an independent and self-directed way (European Commission, [Competence | Esco \(europa.eu\)](#)).

Hence, "Digital competence involves the confident, critical and responsible use of, and engagement with, digital technologies for learning, at work, and for participation in society. It includes information and data literacy, communication and collaboration, media literacy, digital content creation (including programming), safety (including digital well-being and competences related to cybersecurity), intellectual property related questions, problem solving and critical thinking (European Commission, 2019, [Key competences for lifelong learning - Publications Office of the EU \(europa.eu\)](#))

In line with this the Commission prepared a Digital Competence Framework for all European citizens, defining the basic components of digital competence in 5 areas:

DigComp's five key areas and 21 competences



Source: European Commission, 2022, [JRC Publications Repository - DigComp 2.2: The Digital Competence Framework for Citizens - With new examples of knowledge, skills and attitudes \(europa.eu\)](https://publications.jrc.ec.europa.eu/repository/handle/JRC113661)

b. Digital Competence Framework for VET within DigiReact

Since the ever changing world presupposes technological innovations combined with digital devices and applications both in workplaces and everyday life, it is pivotal also for VET educators to be digitally competent and akin. This is especially imperative as future VET students are likely to have better digital skills than the VET teachers/trainers and as such they may also expect more digital trainers who are digitally competent to suggest flexible, interactive and innovative learning experiences.

Moreover, „tied to the increasing need to use technologies in their teaching practice is the requirement to change pedagogy to ensure that digital tools are used effectively not only in teaching but also in course design and assessment “(NCVER, Teaching Digital Skills: Implications for VET Educators “, Australia, 2020, GPG_VET_educator_workforce.pdf).

About the Survey

Using or developing a self-assessment framework is a practical tool to identify a trainer’s level of digital intelligence. In line with this DigiReact set a digital capability framework and self-assessment questionnaire developed by the consortium, focused on determining the target group’s (VET providers)

level of digital literacy, digital communication, business transformation, and personal learning and mastery.

To this end, consistent with the digital competencies identified by the Commission, the consortium prepared a questionnaire covering all the five areas: information and data literacy, communication and collaboration, digital content creation, safety and problem solving. Additionally, questions discussing e-leadership and digital leadership skills were included in the questionnaire to have an all-inclusive picture and verify the needs that VET providers in all the participating five countries have to be more digital.

The Survey was conducted by all of the partners of the consortium - AKNOW, CCSDE, CFP Cemon, QBS Gewerkstatt, SPEL, within their institutions in all of the 5 partnering countries- Germany, Greece Portugal, Ireland and Italy, including questions on the level of knowledge and skills related to the digital transformation of the workplace.

The survey was conducted online on the basis of the internet access among the employees of the partnering institutions. The minimum number of respondents per institution was set 21. For the purposes of the survey and in order to create training materials tailored to the needs, the survey aimed at getting more information about the employees' abilities, difficulties, challenges but also needs in digital competences especially in managing remote teams.

The majority of respondents work for small or medium enterprises with about 500 employees. Demographically female and male employees are evenly represented, with the exception of the results from Spel, Portugal, where 90% of the respondents are female. Age group varies ranging mostly from 35 to 60. Most of the respondents are either experts, trainers or managers with university degree who at some point have taken upskilling training. One more observation is that majority of the respondents are full-time employed.

Results and Discussions

The purpose of the DigiReact project is to make VETs more digital and sustainable by providing trust and confidence in VETs through innovation. The project is based on the idea that the value of digital transformation lies in using digital technology to make the industry competitive, efficient and sustainable.

The results of the survey in all the 5 countries show that in general the respondents have average skills in dealing with digitization and digital technologies except for a very few over 60.

1. As far as it refers to **digital competences**, among them being Operational skills; Communication skills, Problem-solving skills; Content creation; Online safety, it was found out that majority has high application skills and use digital applications and devices confidently, but few understand the underlying mechanisms and connections. To this end, the results from Gewerkstatt, Germany, highlights that “almost everyone knows how to get information on the Internet, but critical evaluation is often difficult. Almost all of the participants can “post” content, but few know whether content is protected. Moreover, while in the area "designing and creating" digital content shows that posting is widespread, a programming language skill is scarce”. Similar picture is in Portugal, acknowledged by the results gained by Spel: “it is easy to see that

most skills are basic and mostly used on classroom contexts, such as interactive activities who allow them to engage with students on online/digital environments. Most of the interviewees can't design websites or handle internet's advanced settings and possibilities." The same way, CCDE, Ireland states that "generally participants feel comfortable with most of the areas in IT Affinity. Programming or generally more complex tasks like building a website or exploiting data to take decisions and make forecasts and even using gamification in their daily practice are the areas that for sure need improvement". In its turn AKNOW, Greece concludes that when it comes to IT affinity, it seems respondents need to acquire the following skills: Creating engaging/interactive content, safeguarding Intellectual Property Rights, being safe online. The situation is relatively more challenging in Italy, as reported by CFP Cemon. The territory the institution represents –Piemonte, has a lot of little villages, 8000 municipalities over all the "big Boot" and 30% of them are under 5000 of inhabitants. Provision of a good quality internet connection is still an issue and respondents point to this aspect and the imperative to solve it before talking about "digital". In line with this, the most common problem is the one connected with communication, and specifically, how to send information to other colleagues or students in a better way, in order to be operative and reachable.

Thus, in all of the 5 countries there is need for understanding the interrelationships of digitization.

2. The next field to be improved in all of the participating countries is related to **the e-leadership skills and digital leadership**. In this connection, the respondents from Gewerkstatt, Germany, were rather critical, identifying need for companies to be more agile and flexible as well as means for improving management by using new methods and instruments. On the other hand, respondents from Portugal consider that their companies acknowledge the advances brought through the digital revolution and all the strategic assets connected with it. Similar conclusion provides CCDE about Ireland. Regarding e-leadership the general impression from the survey (but also from the greater picture of the country) is that the companies and institutions have understood the importance of the matter and try to move to the right direction even if their workforce doesn't have a very clear picture of how to enforce successful digital transformation in their activities (an aspect to be explored). Concerning the Greek case, AKNOW has found out that the following fields of knowledge should be scrutinized: strategic assets in digital transformation, motivation to become digitally transformed, business plan for digital shift. Thus, on average the respondents in all the 5 countries have the impression that digital leadership is not currently full-heartedly implemented in their companies. Also, that financial investments for an advanced e-leadership and digital leadership is not sufficient. Thus, the assessment of managerial skills also shows that there is a need for action and this above all regarding the use of new tools, e.g. for collaboration.
3. The **main challenges** faced in all the countries regarding digitization are the lack of knowledge on how to apply innovative training approaches, the lack of skilled staff and the identification of the market needs. Other than these, the respondents have problems as well as insecurities in ensuring that an innovative training/educational approach/model is used and enters the DNA of the company.

4. Regarding **future work tendencies**, interviewees mentioned the creation/use of a work cloud. For these tendencies, it was also mentioned the technological revolution ahead and the possibility this brings of distance learning and integration of digital resources. This is mentioned within the technological investment made. Furthermore, the respondents admitted that digital technology is the foundation for the adaptation of such and is guaranteed to be a great method to access all kinds of information, to better run distance work. One of the key Among immediate benefits/achievements is digitalization of files which do not need to be in hard copies as well as study sessions/platforms.
5. Among **motivating tools**, overall the respondents are more inclined to use certificates, personal interests, Chat/Forum/Commenting as well as badges/rewards in order to motivate students/trainees. Thus, motivating comes more from traditional sources (e.g certification and personal interests) so there is a big room for improvement in adopting technologies that increase engagement (gamification, collaborative learning etc) and suggest content related to the likes and needs of the trainee (e.g. AI/Machine Learning-assisted).

Conclusions

As organizations seek to advance their digital transformation, dealing with a wide range of high-value initiatives, they will require balancing agility with better management.

When initiating or utilizing digital transformations, companies should identify how their organizations are pursuing digital transformation and evaluate how to empower proactive rather than reactive approaches to new developments. Despite being acknowledged by the respondents only marginally, Cloud continues to be a main driver of, and enabling technology for, digital transformation. Regarding data opportunities and risk, enlarged disposal of data and enhanced approaches for processing data enable new opportunities, from operational improvements to monetization. Last but not least is the aspect involving people. In a digitally transforming world with swelling accessibility of new tools and technologies such as AI, people remain cornerstone for the development and transfer of products and services (Adam Aft, Baker McKenzie, 2021/2022 Digital Transformation & Cloud Survey: A Wave of Change, <https://www.bakermckenzie.com/-/media/files/insight/publications/2021/12/2021-digital-transformation--cloud-survey--a-wave-of-change.pdf>). As for the trainers, they need to be more agile and that also in instructional design, should watch trends, among other EU project reports, innovative pedagogy, etc. be engaged in action as well as research and be ready to lead the change (Wim Van Petegem, et. Al., Leuven University Press 2021, [Evolving as a Digital Scholar: Teaching and Researching in a Digital World on JSTOR](#)).

Thus, a comprehensive and all-inclusive approach to digital skills and competences adoption and implementation is needed to enable, simplify and support the digital skills capability development of VET. The strategy should take into account both organizational responsibilities among them being e-leadership and digital leadership as well as infrastructure, and individual responsibilities such as teaching and learning practices.