

DIGCOMP 2.1. – THE CASE OF BULGARIA

Irina Danailova¹
e-mail: i.danailova@unwe.bg

Abstract

This article presents a methodology for the implementation of Digital competence framework (DigComp 2.1.), verified and approved in Bulgaria. DigComp is a critical tool to understand digital competence, to increase mobility and educational opportunities; to help empower individuals with digital skills, required to the needs of job market. This methodology is part of a national initiative² for development of digital competences through the implementation of DigComp 2.1, which aims to overcome the imbalance between the digital knowledge and skills of the workforce.

Keywords: digital competence, DigComp 2.1, digital skills, methodology, human capital

JEL: J24

Introduction

This article presents a methodology for the implementation of Digital competence framework DigComp 2.1., verified and approved in Bulgaria. DigComp is a critical tool to understand digital competence, to increase mobility and educational opportunities; to help empower individuals with digital skills, required to the needs of job market. The main idea of this article is to describe the Bulgarian methodology, to make it accessible to the scientific community and to provide it for use whenever and wherever it is needed. The shortage of digital skills will create problems in the labour market in the very near future and the sooner measures are taken to overcome it, the smoother the transition to digitalisation will be.

¹ Assoc. Prof., PhD, Department of Human Resources and Social Protection, University of National and World Economy, Sofia, Bulgaria

² In Bulgaria, in 2021, the MLSP launched a procedure for the development of digital competences, the aim of which, through the implementation of DigComp 2.1. The author is part of the team that developed and approved the methodology. More information is available in MLSP (2021).

Digital skills – Bulgaria

The development of digital technology, especially in the past four years, is taking place at a pace many times faster than it was possible 100 years ago. Digitalisation and digital transformation, and all the changes they bring, are being monitored and analysed using various measures and indicators, and are entering the European and national policy arena. Labour market is no exception to the formed tendency. Even though there is a scarcity of specific instruments / tools which are tightly related to this market, a thorough investigation of the available tools shows the presence of certain aspects which could be implemented in analysing the trends.

At the European level, the status and progress of Member States in relation to digital technologies is actively monitored, as one of the important indicators is the Digital Economy and Society Index – DESI (European Commission, 2022). The index is a tool which is used to measure the progress of the Member States of the European Union towards digitalisation. It consists of five main areas (with more than 30 indicators):

- Connectivity: reflects access to fast and reliable broadband (including fixed and mobile);
- Human capital / digital skills;
- Internet usage: activities such as digital news, shopping and online banking;
- Digital adoption: the use of advanced digital technologies such as artificial intelligence, the Internet of Things, cloud computing and big data analytics;
- Digital public services: eHealth (such as telemedicine, e-prescribing and medical data exchange), which uses advanced technologies to improve public services.

Over a number of years (2014 to 2019), the DESI is periodically recalculated as small changes are made concerning the choice of indicators, resulting in adjustments to the core indicator data. The biggest change /refinement/ was made in 2019, where the latest technological developments were taken into account. The DESI has been recalculated for all countries for previous years to reflect the above changes in the choice of indicators and adjustments to the underlying data (European Commission, 2019). This refinement is important because a more detailed analysis immediately reveals differences in the reported values for different years.

Analysis of the DESI results allows comparisons to be made between different countries, the progress of each country to be monitored and recommendations for change to be made where necessary.

Table 1 shows the index data for Bulgaria and an aggregated indicator for the EU. This approach allows the following main conclusions to be drawn:

- Bulgaria (together with Romania) consistently ranks at the bottom in terms of digital technology penetration and use;
- While Bulgaria’s progress in terms of digitisation is weak and slow (from 32.4 in 2017 to 37.7 in 2022), the EU is making a much more noticeable progress (46.9 in 2017 to 52.3 in 2022);
- At this rate, our country will hardly be able to reach the EU’s ambitious targets of 80% of the adult population having at least basic digital skills by 2030, so digitisation should be accelerated.

Table 1: Digital Economy and Society Index (DESI) from 2014 to 2022

DESI, year	Bulgaria		European Union
	Rank (27 countries)	BG	EU
DESI, 2015	27	0,36	0,45
DESI, 2016	27	0,35	0,49
DESI, 2017	27	32,4	46,9
DESI, 2018	27	33,5	46,5
DESI, 2019	28	33,8	49,4
DESI, 2020	28	36,4	52,6
DESI, 2021 r.	26	36,8	50,7
DESI, 2022 r.	26	37,7	52,3

Source: Information elicited from official EU commission reports for Bulgaria.

The level of digitalisation in Bulgaria is also the subject of a study by the NSI, and the DESI data can be complemented by the following information at the national level (NSI, 2022):

- 12.8% of Bulgarians have never used the Internet. There are serious regional disparities - 16% in the North-West and 7.6% in the South-West;
- the fact that 79% of people say they use the Internet at least once a week or every day, and at the same time only 39.1% of the population have digital skills related to copying and moving folders, and 18.6% can edit photos, video or audio files, is perplexing;
- the internet is mainly used for making phone calls (67.3%), participating in social networks (63.4%), exchanging messages (61.5%), finding information about goods and services (60.2%) and reading news (50.9%). The least frequent use of digital networks was for accessing health services via a website, at 3.3%’;
- 87.3% of households have access to the Internet, with the most common means of access being a mobile phone or smartphone (71.8% of individuals);

- The use of online government services is very low - 26.4% use the Internet to interact with government and public institutions;
- E-commerce is almost twice as developed in cities than in villages (45.4% compared to 26.9%).

A brief review of the statistics shows that, on the one hand, digital transformation is already a fact (especially in the context of post-pandemic changes), but, on the other hand, Bulgaria's readiness to cope with the changes quickly and effectively is very low. The data highlights shortcomings that could (and should) be seen as unrealised potential. Digitalisation is developing faster than people are acquiring digital skills, which is a prerequisite for problems.

DigComp 2.1. – Implementation in Bulgaria

A possible solution has again been provided by the European Commission through the use of DigComp, a framework for the development of digital skills for all citizens, created in 2013 (Ferrari and Punie, 2013) and revised in 2018 (DigComp 2.1.) and then in 2022 (DigComp 2.2.). DigComp is a tool that takes a common approach to understanding the content and levels of digital literacy, while being flexible enough to allow for national and country specificities in its application. DigComp (Vuorikari, Kluzer and Punie, 2022) includes **five** areas of competence:

1. Competence area 1: Information and data literacy
 - 1.1. Browsing, searching and filtering data, information and digital content
 - 1.2. Evaluating data, information and digital content
 - 1.3. Managing data, information and digital content
2. Competence Area 2: Communication and Collaboration
 - 2.1. Interaction through digital technologies
 - 2.2. Sharing through digital technologies
 - 2.3. Engaging in citizenship through digital technologies
 - 2.4. Collaboration through digital technologies
 - 2.5. Netiquette
 - 2.6. Managing digital identity
3. Competence area 3: Digital Content Creation
 - 3.1. Developing digital content
 - 3.2. Integrating and re-elaborating digital content
 - 3.3. Copyright and licences
 - 3.4. Programming
4. Area of competence 4: Safety
 - 4.1. Protecting devices

- 4.2. Protecting personal data and privacy
- 4.3. Protecting health and well-being
- 4.4. Protecting the environment
5. Area of competence 5: Problem solving
 - 5.1. Solving technical problems
 - 5.2. Identifying needs and technology responses
 - 5.3. Creatively using digital technologies
 - 5.4. Identifying digital competence gaps.

To reflect task complexity, performance autonomy and cognitive domain, DigComp 2.1 defines a total of 8 levels – 4 basic with 2 sublevels each (1 and 2: basic level; 3 and 4: intermediate level; 5 and 6: advanced level; 7 and 8: highly specialised level).

The use of DigComp in member countries is encouraged. Some of the very successful examples of the application of the digital framework are:

- PIX: France (<https://pix.fr>) – a platform for the assessment and certification of digital skills, including self-assessment tests, links to digital information sites, up-to-date digital skills training opportunities, online self-learning resources.

National Catalogue of Competences: Czech Republic (<https://nsp.cz/>) – website with standardised job profiles, job advertisements, news, training centres.

IKANOS: Spain (<https://ikanos.eus/en/>) – contains steps, actions and tools that organisations can use in the digital transformation management process.

In Bulgaria, in 2021, the MLSP launched a procedure for the development of digital competences, the aim of which, through the implementation of DigComp 2.1, is to “overcome the imbalance between the digital knowledge and skills of the workforce and the requirements of the future labour market, thereby creating the conditions for achieving a competitive and growing economy based on technological development” (MLSP, 2021). All activities are implemented jointly in partnership with Union for Private Economic Enterprise the Confederation of Labor “Support” (LC Support), under the Operational Program “Human Resources Development”.

The main goal is through joint actions of social partners to determine the specific levels of digital skills that employees need in their work, as well as to support their acquisition, in accordance with the evolving digital technologies in individual sectors of the Bulgarian economy.

In Bulgaria, the implementation of DigComp 2.1. was provided by applying the following methodology³:

³ The methodology presented is part of the activities under Project No BG05M9OP001-1.128-0006-C01 “Joint actions of social partners for digital skills development”, the author is part of the team.

Identifying the state of and needs for digital literacy development – this activity provides an opportunity to analyse labour market data, examine development projections and plans and activities outlined in the national digital literacy policy. This can be done by:

- Review of strategic documents outlining national and European digitalisation policies in relation to:
 - Labour market and sectoral needs;
 - The level of digitalisation in the labour market and in the specific sector;
 - The changes arising from Industry 4.0 that have relevance and impact on the specific sector;
 - Regional and municipal strategies and policies, etc.
- Review and analysis of statistics related to digitalisation that are also relevant to the specific sector (at European and global level):
 - Current status – level of digital skills possessed and required; global comparisons of digital skills levels, etc.;
 - Forecasting.
- Research on the state and needs of the labour market in the specific economic sector for digital skills, data for Bulgaria (analysis of statistical information from databases and own research):
 - Labour supply – labour force characteristics related to digital skills (general and specific);
 - Labour demand – demand for workers with different levels of digital competences/skills.
- Analysis of working conditions and working environment in the sector concerned and identification of the level of digitalisation and its integration in production:
 - Current status;
 - Development forecasts.
- A review of the state of and opportunities for education and training in digital technologies at national and regional level;
- an analysis of the strengths, weaknesses, opportunities and threats for the economic sector in relation to digitalisation:
 - Identifying barriers to progress and providing the necessary digital 4.0 skills for the future, locally and nationally.

I. Use of the Unified Job Profiles described in the NQF 2011 (under development and testing) – new requirements will be added for the knowledge, skills and behaviours in a digital environment that a professional must possess to adequately perform tasks requiring the use of information and communication technologies.

II. Development of a toolkit to identify the level of digital literacy of the workforce in line with the areas of digital literacy in Digcomp 2.1 – surveys, questionnaires, interviews to test digital literacy knowledge, skills and behaviour through assessment and self-assessment.

III. Identification of a digital skills gap – identified as the difference between the expected level of digital skills/competences (as defined in the Unified Profile) and the actual level of proficiency.

This methodology was tested and approved. Research and analysis of digital skills needs has been carried out and on this basis were developed, tested and validated Unified Job Profiles. The current digital skills of sample of employees were tested and digital skills gaps were identified. On this bases educational content for non-formal education were developed. The main idea of the methodology was not simply to establish a shortage, the last stage envisages proposing programs for building and upgrading digital skills in the case of established deficits of digital skills.

Concluding Remarks

The challenges for Bulgaria are many, but the main effort should be to train people to acquire general and specific digital skills and to convince them that digitalisation will improve and facilitate their work. In particular, there is an urgent need to overcome the preconception that the introduction of digital solutions will lead to unemployment, which leads to strong resistance from employees (in some cases even refusal to work with e-mail). A systematic approach is needed, with long-term plans to ensure the necessary levels of competence. DigComp is a tool that can be extremely useful both for measuring digital literacy levels and for identifying deficits. In this respect, there is also an urgent need to change regulations and education and training systems. The dynamics of the development of digital technologies and of digital transformation itself will require increasingly flexible behaviour on the part of the state, employers and individuals in order to make the transition to digital transformation as smooth and harmonious as possible.

References

- Ferrari, A., Punie, Y. (2013). DIGCOMP: A Framework for Developing and Understanding Digital Competence in Europe, available at: <https://publications.jrc.ec.europa.eu/repository/handle/JRC83167> (accessed 23.08.2023)
- European Commission. (2016). Annual report: Digital Economy and Society Index 2016, Country Profile, Bulgaria, available at: <https://datareportal.com/digital-in-bulgaria> (accessed 27.08.2023)

- European Commission. (2017). Annual report: Digital Economy and Society Index 2017 – Bulgaria, available at: <https://digital-strategy.ec.europa.eu/en/policies/desi-bulgaria> (accessed 27.08.2023)
- European Commission. (2018). Annual report: Digital Economy and Society Index (DESI) 2018 Country Report Bulgaria, available at: <https://digital-strategy.ec.europa.eu/en/policies/desi-bulgaria> (accessed 27.08.2023)
- European Commission. (2019). Annual report: Digital Economy and Society Index (DESI), 2019 Country Report, Bulgaria, available at: <https://digital-strategy.ec.europa.eu/bg/node/1759> (accessed 28.08.2023)
- European Commission. (2020). Annual report: Digital Economy and Society Index (DESI) 2020 Bulgaria, available at: <https://digital-strategy.ec.europa.eu/en/policies/desi-bulgaria> (accessed 27.08.2023)
- European Commission. (2021). Annual report: Digital Economy and Society Index (DESI) 2021 Bulgaria, available at: <https://digital-strategy.ec.europa.eu/en/policies/desi-bulgaria> (accessed 27.08.2023)
- European Commission. (2022). Annual report: Digital Economy and Society Index (DESI) 2022, Thematic chapters, available at: <https://digital-strategy.ec.europa.eu/en/policies/desi> (accessed 01.09.2023)
- European Commission. (2022). Annual report: Digital Economy and Society Index (DESI) 2022 Bulgaria, available at: <https://digital-strategy.ec.europa.eu/en/policies/desi-bulgaria> (accessed 27.08.2023)
- NSI. (2022). Available at: <https://www.nsi.bg/en/content/2805/ict-usage-households> (accessed 25.08.2023)
- MLSP. (2021). Project No BG05M9OP001-1.128-0006-C01 “Joint actions of social partners for digital skills development – Component 1“, available at: <https://mlsp.government.bg/eng/proekt-bg05m9op001-1127-0001-razviti-na-digitalnrite-umeniya-komponent-1> (accessed 23.08.2023)
- Vuorikari, R, Kluzer, S., Punie, Y. (2022). The Digital Competence Framework for citizens – with new examples of knowledge, skills and attitudes, available at: <https://publications.jrc.ec.europa.eu/repository/handle/JRC128415> (accessed 24.08.2023)