DATALIT

ONLINE QUESTIONNAIRES REPORT WP1

August 2020

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Scope

The objective of this online questionnaire is to fulfill the Work package 1 (WP1) - Developing a comparative needs analysis on Data Literacy - project deliverable 1.2, regarding the Needs Analysis Tools. It was expected to have a total of 500 participants in this online questionnaire.

The online questionnaire had a total number of respondents of 705, but the number of usable answers is 704.

All consortium partners participated and the numbers of respondents per partner country are:

- EN = 48
- AL = 73
- LT = 75
- SRB = 179
- PT = 198
- IT = 128
- DE = 3

The questionnaire was conducted by Qualtrics[1] platform, using surveys in seven different languages, English, Albanian, Lithuanian, Serbian, Portuguese, Italian, and German. The questionnaire was disseminated, mainly, via each partner organization (internally) and social media.

The results of this questionnaire are complementary to other project deliverables, in order to construct the final Needs Analysis Report - deliverable 1.3 of the WP1.

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[1] *https://www.qualtrics.com*

Section I: Introduction and statistical background data

In this section, the questions are about demographics of the respondents.

Question 1 and 2 are related to the participants age and gender, respectively:

As we can see in Figure 1, the majority of respondents (41.2%) have 30 years old, or bellow, and most of them are male respondents ($\approx$ 60%). In total, $\approx$ 74% of respondents have 40 years old or below.
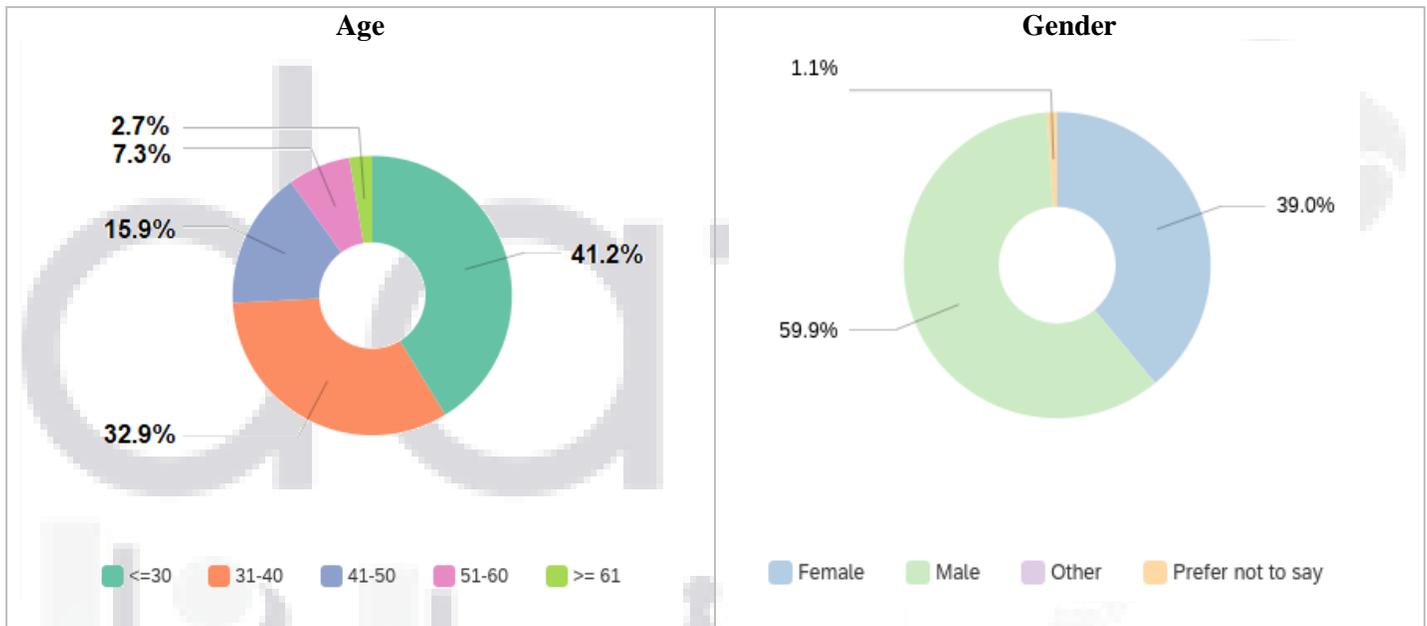
Figure 1. Age and gender of respondents, for the online questionnaires

Question 3 - In which country do you currently reside?

The respondents are located in diverse geographical areas. In Figure 2, we see that the major contributors for the online questionnaire are from Portugal (26%), Serbia (20.9%), Italy (18.1%), Lithuania (14.9%), and Albania (10.1%). 27 countries participated in this online questionnaire.
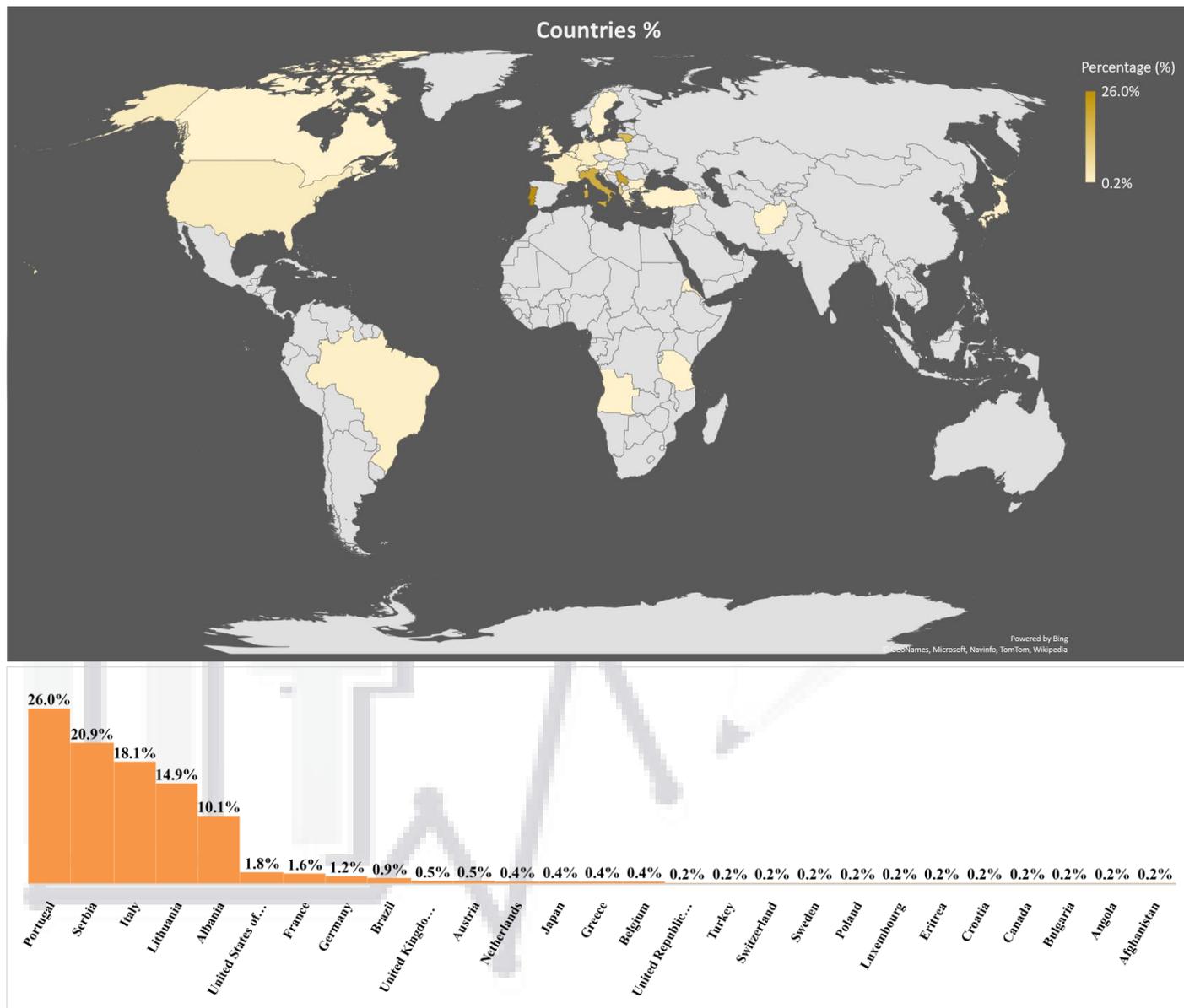
Figure 2. Countries where respondents reside - Portugal; Serbia; Italy; Lithuania; Albania; United States of America; France; Germany; Brazil; United Kingdom of Great Britain and Northern Ireland; Austria; Netherlands; Japan; Greece; Belgium; United Republic of Tanzania; Turkey; Switzerland; Sweden; Poland; Luxembourg; Eritrea; Croatia; Canada; Bulgaria; Angola; Afghanistan.

Question 4 - Type of organization respondents work in:

About 55.4% of respondents work in private companies, 20.2% work in Higher Education Institutions (HEIs), and the remaining 24.3% work in other fields, like is shown in Figure 3. In Table 1, we can see other types of organizations, where respondents work.
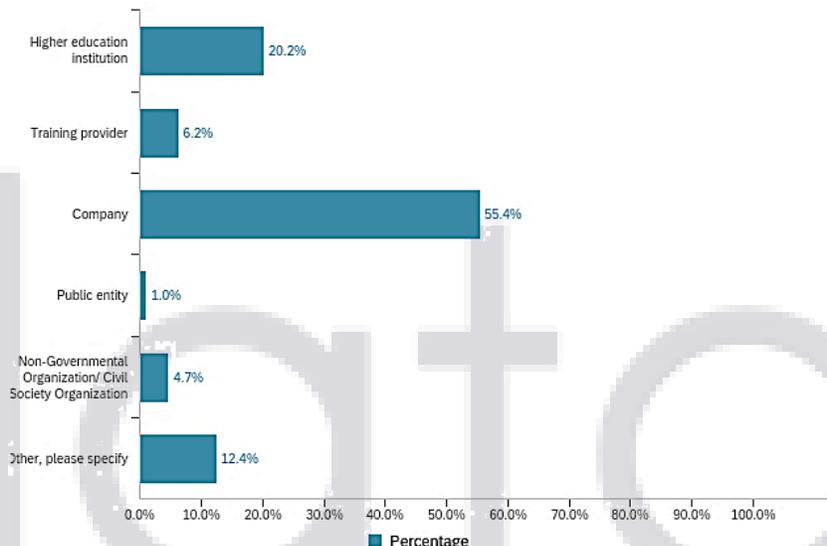
Figure 3. Type of organization where respondents work in.

Table 1. Other types of organization, where respondents work.

Other, please specify	Translated
Škola	School
Preduzetnik	Entrepreneur
Preduzetnik	Entrepreneur
Pružanje usluga	Provision of services
Max Bet sportska kladionica	Max Bet Sports Betting
Privatna Firma	Private Firm
Desempregado	Unemployed
INE_Angola	INE_Angola
Pesquisa e Planeamento	Research and Planning
Lietuvos kariuomenė	Lithuanian army
Asociacija	Association
Agenzia di comunicazione	Communication agency
Fondazione	Foundation
Università	University
Team di liberi professionisti	Team of freelancers
Centro di ricerca	Research Center
Centro di Ricerca	Research Center
Onlus	Non-profit
Libero professionista	Freelancer
Sono una commercialista che lavora sia come assistenza tecnica su bandi regionali che come ricercatrice all'università	I am an accountant who works both as a technical assistance on regional calls and as a researcher at the university
Organizzazione Internazionale	International Organization
Partecipata Pubblica	International Organization
Public body	Public body
Unemployed	Unemployed

Question 5 - Department/faculty of all respondents:

In the questionnaire there was an optional question regarding the department that the respondents work at. 241 respondents in total opted to respondent this question. 51.5% of these respondents belong to HEIs, 12.4% work in Business/BI/Economics/Finance departments, 5.4% works in IT/Technical roles/Big Data/Analytics, almost 3% work in Libraries or in Project management/Management roles or still in Communication/Marketing/PR. 22% of respondents work in diverse areas, like, Tourism, Healthcare, Geology, Administration, Justice/Law, Consulting, Arts, and others (Figure 4).
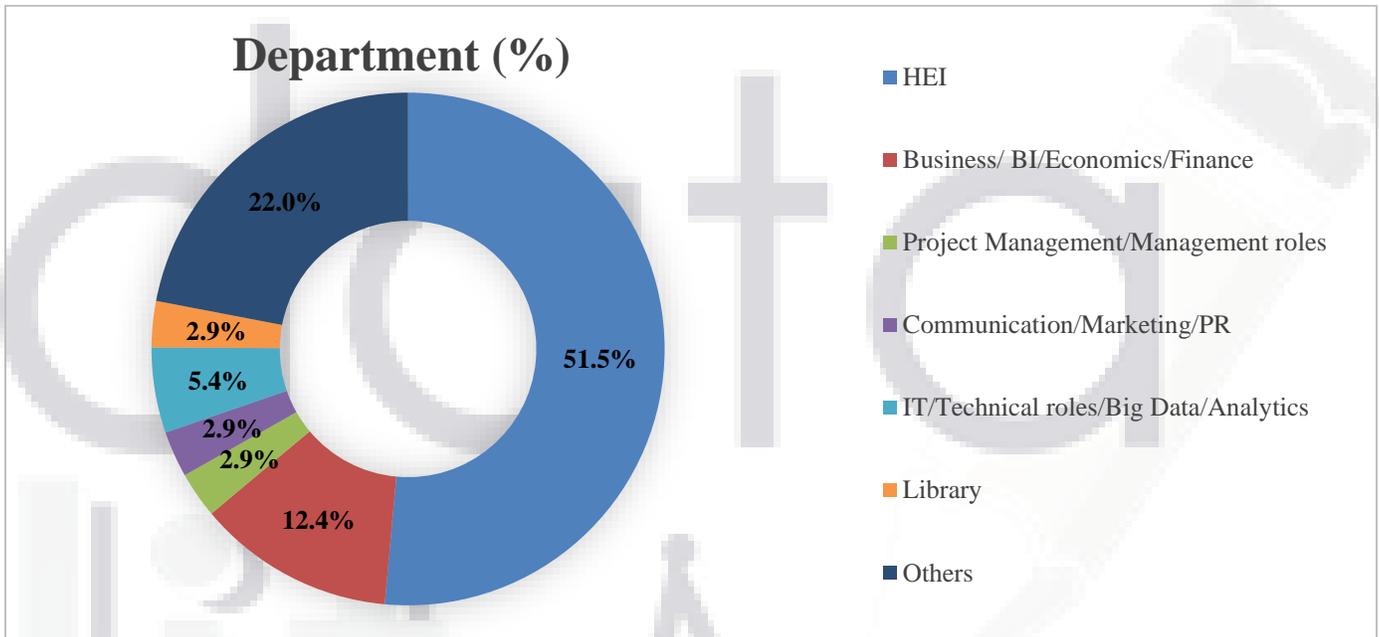
Figure 4. Respondents department in the organization.

The respondents that work at HEIs, are from various departments/faculties, like the examples below:

- Industrial Engineering and Engineering Management
- Faculty of Technical Sciences
- Faculty of Philosophy
- Faculty of Law
- Faculty of Sport and Physical Education
- Faculty of Electrical Engineering
- Nova Information Management School
- Faculty of Sciences
- School of Public Policy and Administration

- Faculty of Economic and Business Administration
- Faculty of Communication
- Faculty of Humanities and Liberal Arts
- Faculty of Technical Medical Sciences
- Faculty of Engineering, Informatics and Architecture
- Faculty of Legal and Political Sciences
- and others…

Question 6 - Respondents role/position in their organization:

In the questionnaire there was another optional question regarding the role of the respondents in their organization. 564 respondents opted to respond. 21.6% of these respondents work as IT/Analysts/BI, 11.2% are Professors at HEI, almost 10% are Project managers or coordinators, 9.2% are Students. 35.5% fall in the category of others, that include QA engineers, Interns/Trainees, Sales assistant/Customer service, Laboratory assistant, CTO, Medical doctor, Auditor, Lawyer, Environmental inspector, Secretary, and many others (Figure 5).
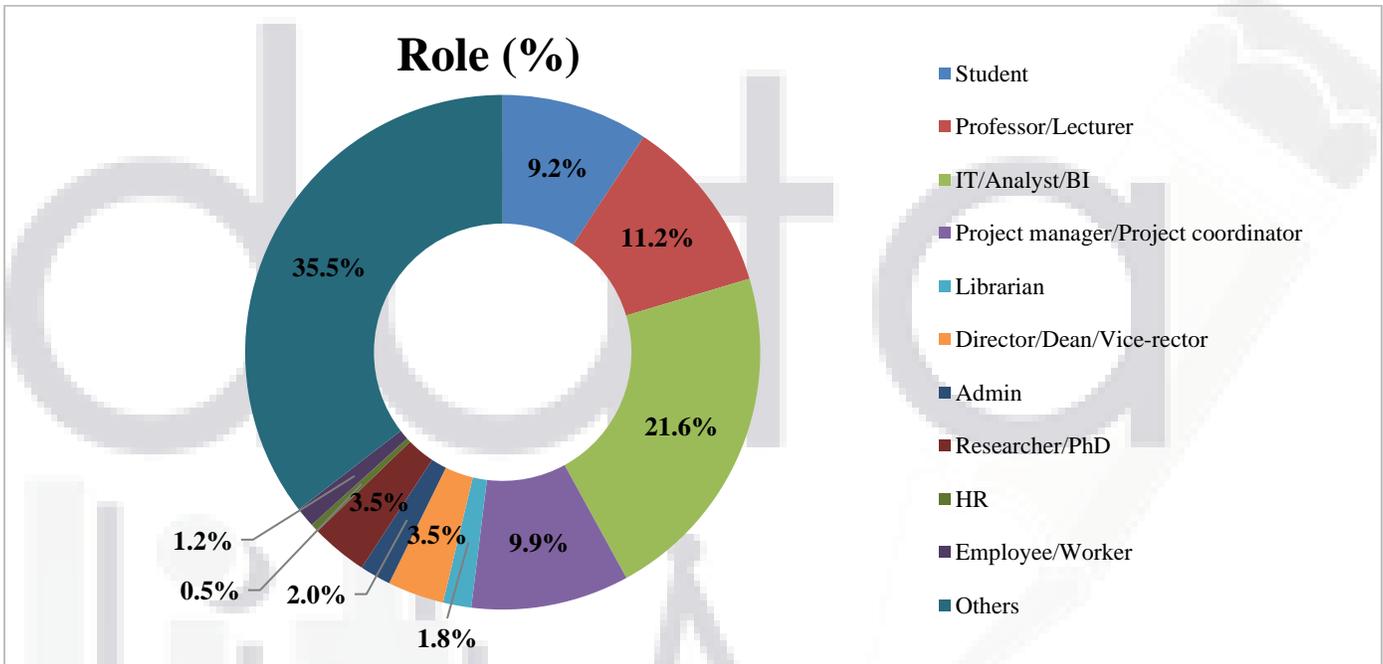
Figure 5. Respondents role/position in their organization

Section II - Data Literacy in general

Question 7 - How would you rate your knowledge on Data Literacy?

In figure 6, there is the self-rating of DL knowledge of the respondents. 54.2% say that they have a medium knowledge on DL, while 6.9% admit they have none.
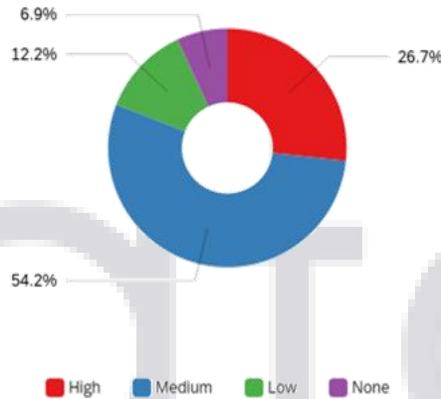
Figure 6. Respondents knowledge on DL.

Question 8 - How do you rate the importance of "Data Literacy" in relation to:
- *Personal development*
- *Further career development*
- *Success in formal education*
- *Reaching top career positions*
- *Finding a job*

Respondents consider that personal development (64.1%) is the most important feature for DL, while finding a job (48.9%) is not as important. Still, 1.5% of respondents say that personal development isn't important for DL. Table 2 shows the percentage of importance of DL in relation to personal development, success in formal education, finding a job, further career development, and reaching top career positions, according to respondents ranking.

Figure 7. Order of importance of DL in relation to personal development, success in formal education, finding a job, further career development, and reaching top career positions.

Table 2. Percentage of importance of DL in relation to personal development, success in formal education, finding a job, further career development, and reaching top career positions.

	Very important	Medium important	Less important	Not important	Don't know
Personal development	64.1%	27.5%	3.1%	1.5%	3.8%
Success in formal education	49.6%	39.7%	6.1%	0.8%	3.8%
Finding a job	48.9%	36.6%	9.9%	0.8%	3.8%
Further career development	60.3%	31.3%	6.1%	0.0%	2.3%
Reaching top career positions	57.3%	32.1%	6.1%	0.8%	3.8%

Question 9 - Which competences related to soft skills do you consider most important for a "data literate" person:

The competences related to soft skills that respondents consider that are most important, for a "data literate" person, are described in order in Figure 8, according to the respondents ranking. Table 3 shows the percentage in terms of importance. Some other soft skills mentioned by respondents are, motivation, intellectual curiosity, empathy, systemic thinking, and others.
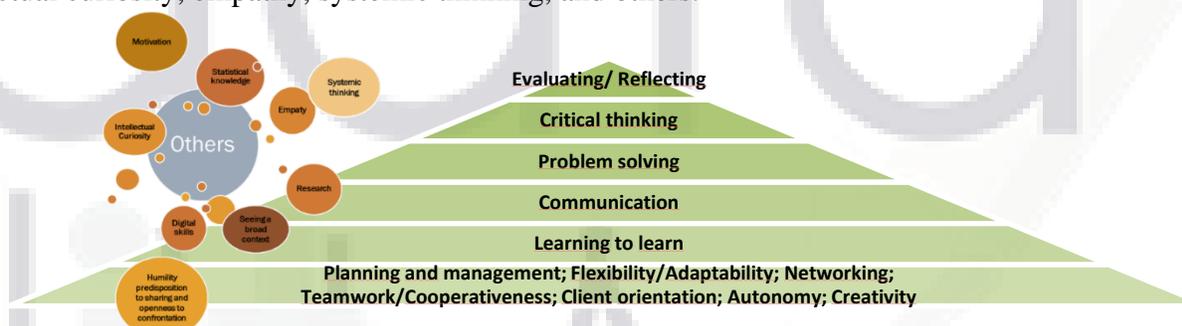
Figure 8. Ranking of the most important soft skills for a "data literate" person.

Table 3. Percentage of importance of soft skills for a "data literate" person

Soft Skills	Very important	Medium important	Less important	Not important	Don't know
Communication	57.3%	26.0%	9.2%	4.6%	3.1%
Creativity	26.7%	52.7%	12.2%	4.6%	3.8%
Critical Thinking	70.2%	19.8%	6.9%	0.8%	2.3%
Learning to learn	53.4%	35.1%	6.9%	0.8%	3.8%
Evaluating/Reflecting	74.0%	18.3%	3.8%	1.5%	2.3%
Planning and management	42.0%	40.5%	11.5%	2.3%	3.8%
Teamwork/cooperativeness	35.9%	42.0%	11.5%	6.9%	3.8%
Problem-solving	67.9%	26.0%	2.3%	1.5%	2.3%
Flexibility/adaptability	40.5%	39.7%	14.5%	0.8%	4.6%
Autonomy	29.0%	38.2%	20.6%	5.3%	6.9%
Leadership	25.2%	42.7%	18.3%	7.6%	6.1%
Client orientation	35.1%	33.6%	16.8%	6.9%	7.6%
Networking	37.4%	39.7%	14.5%	4.6%	3.8%

Project reference no. 612561-EPP-1-2019-1-IT-EPPKA2-KA

Question 10 - Which functional competences do you consider most important for a "data literate" person:

In terms of functional competences, the respondents consider that reading/creating data classification or rules (56.2%) is most important competence, while reading/creating time trends and forecasts (38.9%) is the least important (Figure 9).

Figure 9. Ranking of importance of functional competences for a "data literate" person, related to DL.

Table 4. Percentage of importance of functional competences for a "data literate" person.
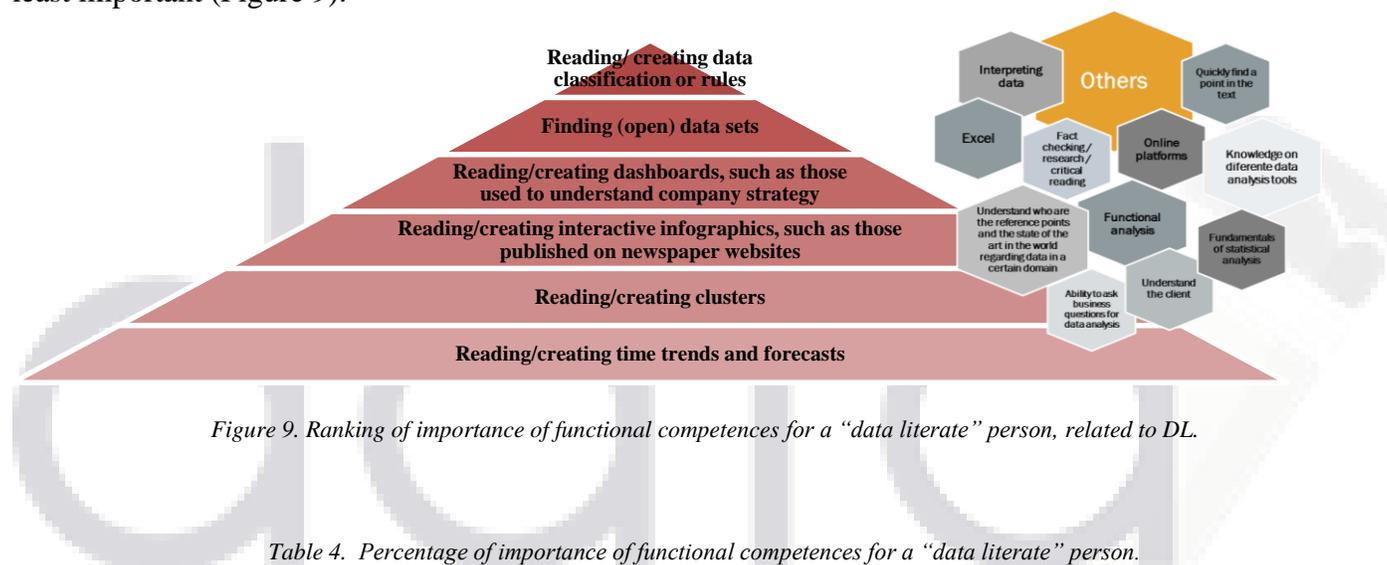
Functional competences	Very important	Medium important	Less important	Not important	Don't know
Finding (open) data sets	45.8%	40.5%	5.3%	0.8%	7.6%
Reading/creating statistics charts such as those published on newspapers	35.9%	45.0%	13.0%	0.8%	5.3%
Reading/creating interactive infographics, such as those published on newspaper websites	39.7%	42.0%	11.5%	1.5%	5.3%
Reading/creating dashboards, such as those used to understand company strategy	45.8%	39.7%	7.6%	0.0%	6.9%
Reading/creating time trends and forecasts	38.9%	37.4%	13.7%	3.8%	6.1%
Reading/creating clusters	39.5%	38.0%	10.1%	1.6%	10.9%
Reading/creating data classification or rules	56.2%	29.2%	7.7%	0.0%	6.9%
Other, please specify	33.3%	25.0%	0.0%	0.0%	41.7%

Section III: Acquisition and development of Data Literacy related competences

Question 11 - To what degree would you say that your department/faculty/organization promotes the acquisition and development of competences related to data literacy in employees?

According to 48.4% of respondents, the promotion of acquisition and development of competences related to DL in employees by their organization is at a moderate level (Figure 10).
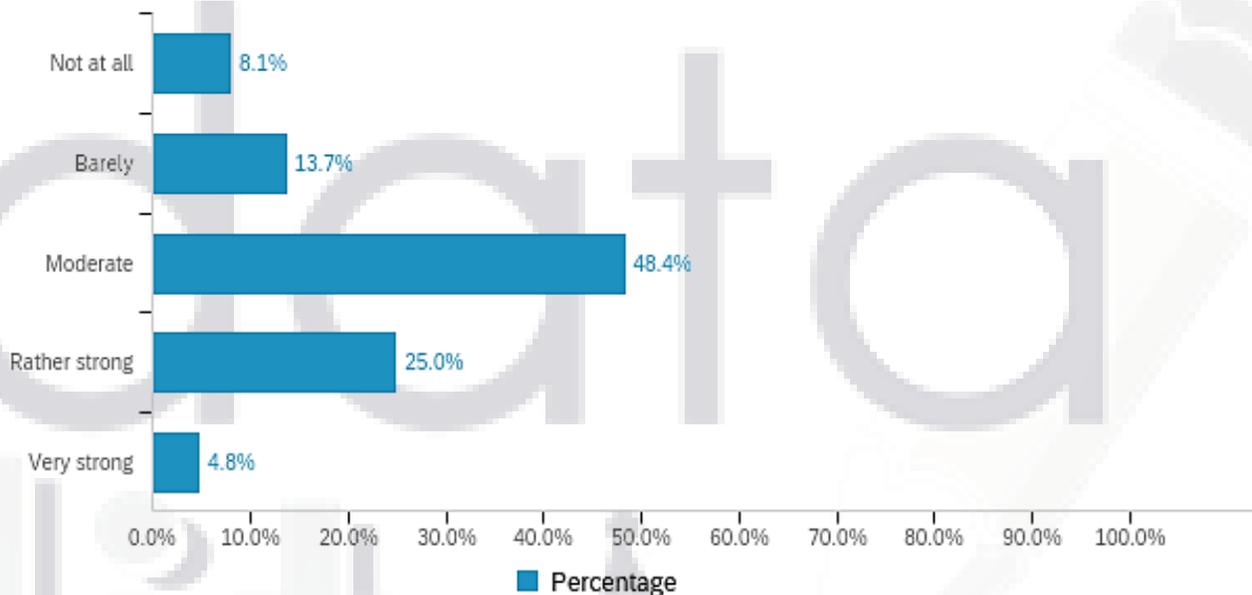
Figure 10. Promotion of acquisition and development of DL related competences, by the organization.

Question 12 - Does your department/faculty/organization use any of the following to achieve this [related to Question 11]?

For the acquisition and development of DL related competences, the respondent's organizations use some tools/methods (Table 4). These are: F2F, 21.6% by "Placements/Traineeships within businesses"; Online, 4.9% by "Training from external providers"; Blended, 31.5% by "Internal career development". Although, between 33.3% and 59.1% say that they don't use any tools/methods to achieve the acquisition and development of DL related competences. Other methods described by respondents are:

- Online courses on personal indication
- Internal informal knowledge sharing
- Internships
- Curriculum units within other courses
- Self-training in action
- Exchange of knowledge between Seniors and Juniors in the different areas
- Data literacy awards

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Table 4. Tools/methods used by organizations, to acquire and develop DL related competences.

	Yes - face to face (F2F)	Yes - online	Yes - blended (mixture of face to face with online)	No	I don't know
Internal career development (such as training modules for employees)	14.2%	4.3%	31.5%	38.3%	11.7%
Training from external providers	10.5%	4.9%	23.5%	41.4%	19.8%
Undergraduate degrees related to data literacy (e.g. Bachelor's)	10.5%	0.0%	7.2%	59.1%	23.2%
Postgraduate degrees related to data literacy (e.g. Master's)	9.5%	1.1%	6.1%	58.1%	25.1%
Undergraduate modules/courses related to data literacy (e.g. Bachelor's)	9.6%	1.1%	10.7%	55.9%	22.6%
Postgraduate modules/courses related to data literacy (e.g. Master's)	7.3%	2.2%	9.0%	55.1%	26.4%
Placements/Traineeships within businesses	21.6%	0.6%	11.4%	50.0%	16.5%
Job shadowing (or internships) in other companies	20.4%	0.6%	9.9%	53.0%	16.%

Question 13 - Is data literacy competence development of students/trainees/employees validated (assessed and evidenced)?

When it comes to validation of competence development, 63.7% of respondents say that there isn't ant type of validation by the organization (Figure 11).
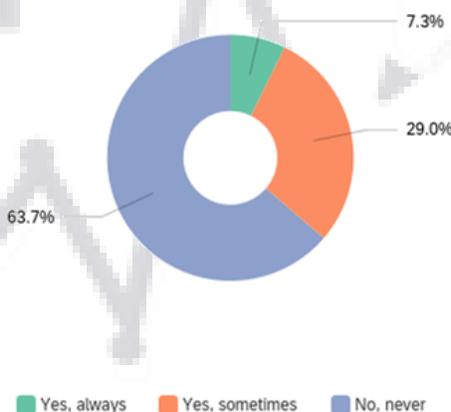
Figure 11. Validation of competence development by the organization.

Question 14 - Please specify which validation tool is used: [when answered 'Yes' in Question 13]

Between the respondents that said that the organization validates the development of DL related competences, some of the validation tools mentioned are as follows:

- Asking for information on completed courses
- Online questionnaire
- Task Completion Time Frame
- Tests, surveys
- LEVEL5
- Depends on the specific aspect of the competence assessed + within which training program. Normally tests
- ECDL
- DigiComp
- Entrecomp

- For lecturers, online control by students responding to the form and control by other more qualified lecturers
- Course assignments, independent work, part of performance appraisal ...
- LMS
- ESCO
- Through practical tasks to display the acquired knowledge
- Certification
- Job evaluation
- Management evaluation
- And others…

Question 15 - When validating competences (i.e. confirmation by an authorized body that an individual has acquired learning outcomes measured against a relevant standard) related to data literacy, do you use a competence framework (e.g. DigiComp, ESCO)?

When asked about if they used competence frameworks, when validating competences, 53.3%, say they do (Figure 12).
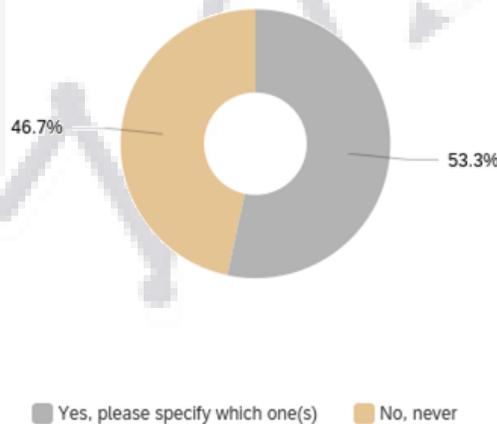
Figure 12. Competence frameworks to validate competences.

The frameworks used are:

- ESCO
- LEVEL5
- DigiComp
- EQF
- Internal tools
- QA audits

Question 16 - Which of the following ways to assess Data Literacy related competence developments is used in your faculty/organization/department?

When asked about which ways to assess DL related competence developments are used in their organizations, the answers are as follows in Figure 13. Other ways to assess DL related competences mentioned by respondents are appreciation from superiors, certifications, and auditor's assessment.

Assessment of DL Competences

Never | Seldom | Occasionally | Often | Always

	Assessment by teachers	Self-assessment by the students/employees/trainees themselves	Through peer-to peer assessments	By observation of facilitators/mentors	With interactive methods (simulation, role plays...)	With online tools
Always	39.4%	27.3%	9.1%	24.2%	9.1%	15.2%
Often	21.2%	24.2%	27.3%	45.5%	24.2%	51.5%
Occasionally	27.3%	24.2%	30.3%	24.2%	30.3%	18.2%
Seldom	3.0%	9.1%	18.2%	24.2%	18.2%	9.1%
Never	9.1%	15.2%	15.2%	6.1%	18.2%	6.1%

Figure 13. Ways to assess DL related competence developments

Question 17 - Have you ever heard about or used any of the following European competence frameworks? Yes/No

The respondents know/used some European competence frameworks. Between 77.4% and 89.9% of respondents said that they either don't know, or don't use any of the European competence frameworks described in Table 5. Respondents mentioned other competence frameworks, that they know about, but don't use.

Table 5. European Competence Frameworks

European Competence Frameworks	Yes	No
Key competence framework for lifelong learning	22.6%	77.4%
CEFR - The Common European Framework Reference of Languages	19.0%	81.0%
ESCO - The European Skills, Competences, Qualifications and Occupations	15.9%	84.1%
DigComp 2.0 - Digital Competence Framework	14.6%	85.4%
Entrecomp - The Entrepreneurship Competence Framework	10.1%	89.9%
EQF - European Qualifications Framework	19.0%	81.0%
Other(s) • Framework of national qualifications • ECVET • Qualifica	0.0%	100.0%

In Figure 14, we can see that the most known/used European competence framework is the "Key competence framework for lifelong learning" for 21.6% of the 'Yes' respondents. The least known/used competence framework is the "Entrecomp - The Entrepreneurship Competence Framework", for 18.8% of the 'No' respondents.
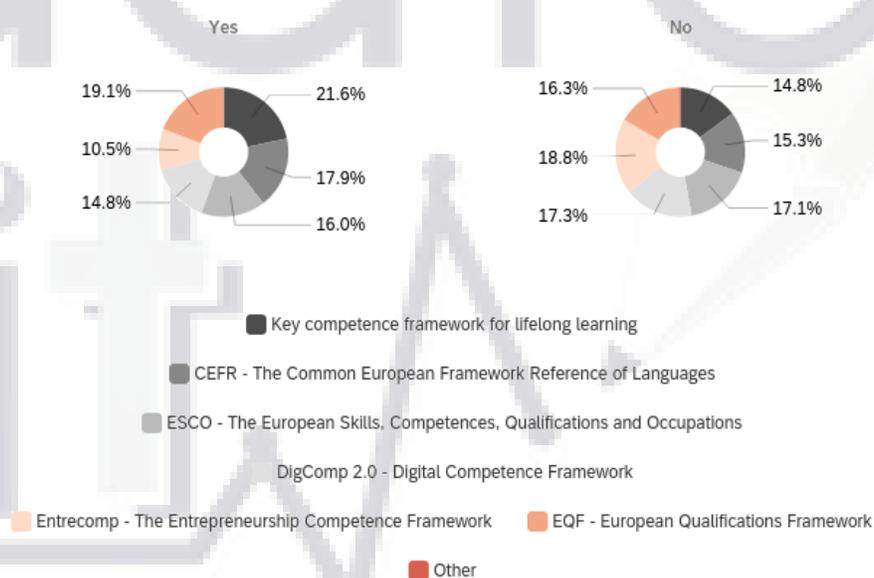
Figure 14. European Competence Frameworks, respondents' answers, Yes vs. No

Question 18 - Do you use e-learning or blended learning (mixture of face 2 face with e-learning) in your faculty/organization/department?

69.4% of respondents use e-learning or blended learning in their organization (Figure 15).
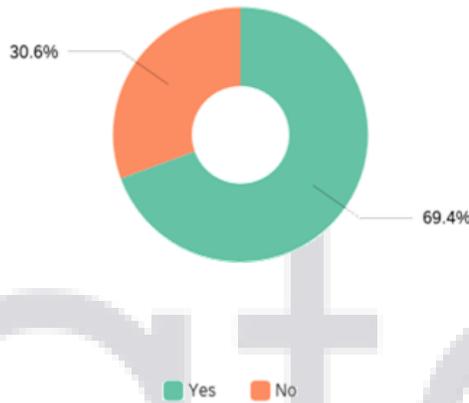
Figure 15. Respondents answer, about if they use e-learning or blended learning.

Question 19 - Which digital tools do you use? [related to Question 18]

The respondents that answered yes in Question 18, use the digital tools described in Figure 16, being videoconference tools the most used tool (53.8%), followed by learning management systems (48.4%), and 66.7% say they never used e-portfolio tools, and 64.5% never used MOOC's.
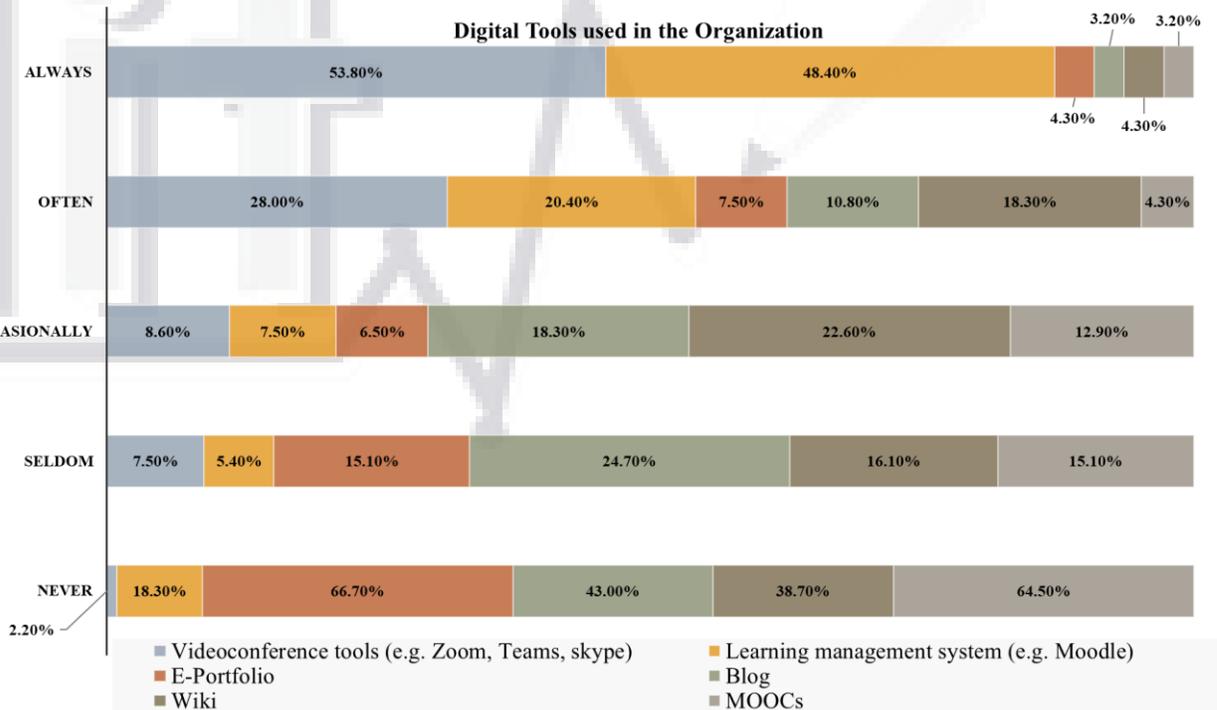
Figure 16. Digital tools used by respondents.

Question 20 - Do you know open learning systems (e.g. LMS, e-portfolios etc.) that connect with validation tools?

When asked about open learning systems (e.g. LMS, e-portfolios etc.) that connect with validation tools, 71.62% of respondents, say that they don't know of any.
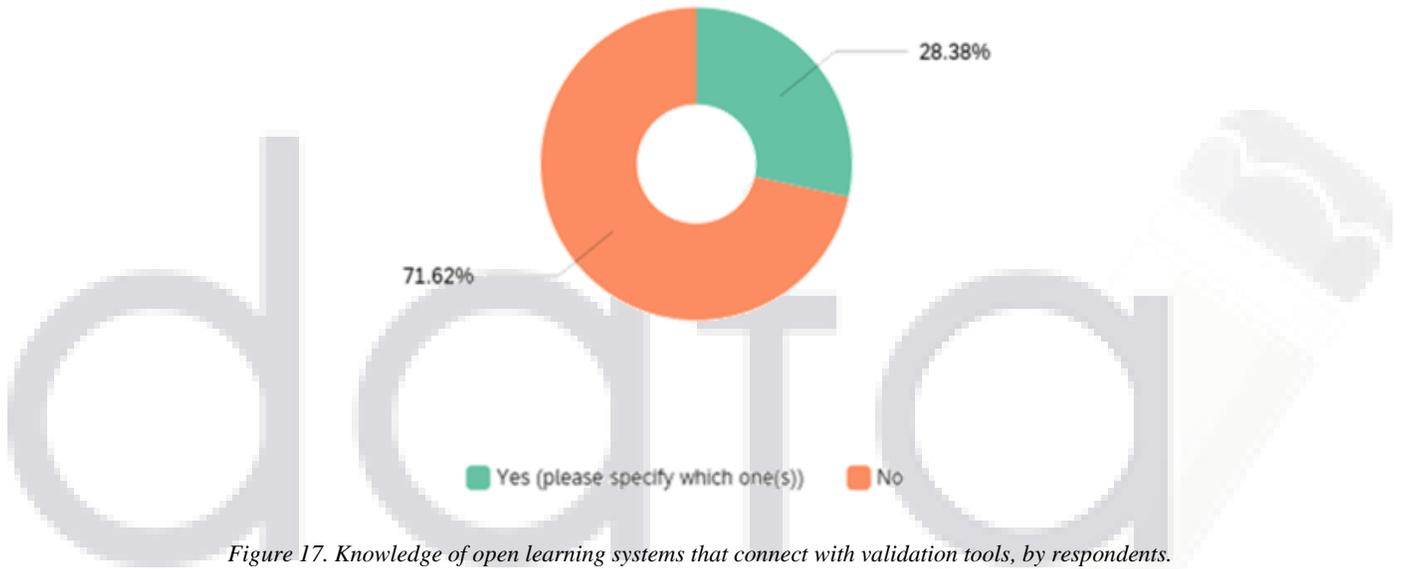
Figure 17. Knowledge of open learning systems that connect with validation tools, by respondents.

The respondents who answered 'Yes' about knowing open learning systems that connect with validation tools, specified a variety of these tools, like Moodle, LMS, Mahara, Blackboard, Udemy, edx, Coursera, and many others (Figure 18).
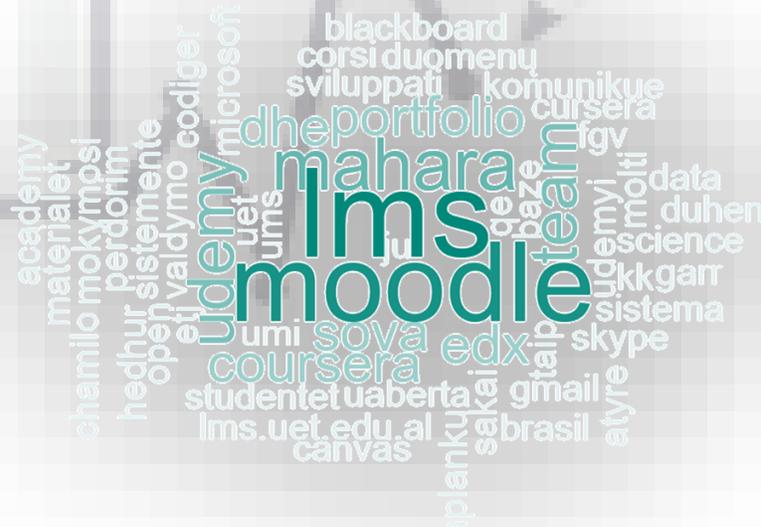
Figure 18. Open learning systems that connect with validation tools.

Question 21 - If you would like to add something about the topic of competence recognition in Data Literacy related fields, please feel free to express yourself here:

The last question of the online questionnaire is about if the respondents what to add something about the topic of competence recognition in DL related fields and some gave their opinions on the subject, example in Figure 19 (untranslated).

Ljudi se previse obaziru na 'sta je normalno' i 'sta je ocekivano', pa s toga podatke upijaju onako kako im je servirano. Ne razmisljaju o tome puno. Ako vec nesto citas, prouci zaboga. Nije dovoljno procitati i ako se slaze sa tvojim vidjenjem da upijes. Provjeri sta se desava, sta je napisano, sta su htjeli time postici ili koju poruku poslati. Grafovi pogotovo. Dosta novina, nacionalnih televizija pa i obrazovnih ustanova kroz statisticke podatke prikazane kroz grafove lazno predstavljaju. Skorasnji primjer je bio porast ekonomije u Srbiji za 5%. Nacin na koji je prikazano, izgleda kao da nam dolazi zlatno doba. A ako malo proucis i izanaliziras, dodjes do zakljucka da cemo biti podjednako siromasni kao i do sad.

That it should not be associated only with business - I think that in our data-driven culture it is a key skill for everyone - essential for decision making and prioritization in life as well as work!

Eu estudo ciência de dados desde setembro 2019 via Plataforma Datacamp, na qual eu realizo cursos relacionados à Python, SQL, Estatística e Visualização de Dados

Options where to get training are not well communicated. This is the first time I've heard about it. I wish I knew the EU sponsored options!

Um pouco como se pode inferir por algumas questões deste inquérito, a literacia de dados envolve todas as dimensões e não apenas a capacidade técnica. Por isso, dimensões humanas e organizacionais (colaboração, trabalho em equipa, comunicação) são essenciais e deverão ser objeto de inclusão em curricula nesta área. O reconhecimento de competências pode ser obtido via esquema robusto de certificação de profissionais e associações sem fins lucrativos

Potrebno je termin prevesti na srpski jezik, slično kao što su to uradile Hrvatska i Slovenija.

Data literacy is a concept with strong relationships with the statistical literacy. For empowering this project, I would suggest the concepts of statistical literacy which has been developed for more than a decade.

Programação

Prática upotreba

Thank you for this important survey

Figure 19. Opinions and contributions of the questionnaire respondents.

Summary and main conclusions

In the first section the respondent's demographics were analyzed. The majority of respondents (≈ 74%) have 40 years old or below and, approximately, 60% of them are male. Respondents from 27 countries participated in the questionnaire, which the main contributors were Portugal, Serbia, Italy, Lithuania, and Albania. 55.4% work in companies and 20.2% in HEI, while the remaining respondents work at training providers, public entities, NGOs, and other kinds of organizations.

The second section refers to DL in general. 54.2% of respondents rated themselves with medium knowledge in DL. Approximately, 7% of respondents admitted they don't have any knowledge in DL. 64.1% agree that personal development is the most important feature for DL. The four most important soft skills to have are evaluating/reflecting, critical thinking, problem-solving, and communication. 7.6% agree that leadership is a soft skill unimportant to DL. In terms of functional competences, reading/creating data classification rules is the most important, according to 56.2% of respondents.

The third section analyses the acquisition and development of DL related competences at the respondent's organizations. 48.4% have a moderate promotion, by the organization, of acquisition and development of this competences, 25% have a rather strong promotion to acquire and develop this competences, and, approximately, 8% admit they don't have any help from the organization in this matter. Unfortunately, between 33 and 59% of respondents don't use any kind of tool or method to acquire and develop DL competences. Approximately, 64% of respondents say that their organization does not use any kind of validation, for DL related competences. The remaining respondents say the organization uses tools like LEVEL5, DigiComp, ESCO, job evaluation, tests and surveys, certifications, etc. The respondents have used frameworks for validation, like ESCO, DigiComp, EQF, and others. In their organizations, they often use online tools and use observation of facilitators/mentors, as a way to assess DL related competences. In terms of European frameworks for validating DL related competences, between 77% and 90% say they don't know or don't use any. Among the respondents that answered yes, the most known/used European framework is the 'Key Competence Framework for Lifelong Learning'. About 69% of respondents use e-learning and/or blended learning in their organization, where they mostly use videoconference and LMS digital tools, while the least used tools are e-portfolio and MOOCs. Approximately, 72% of respondents don't know any open learning systems that connect with validation tools.

On the overall, it is possible to say that there is still some lack of knowledge in data literacy. Analysing the respondent's answers and suggestions, it is clear that there is some confusion regarding DL soft skills and DL functional competences. In the text boxes, where respondents could put other soft skills they considered important, some of them wrote down technical skills, like 'Digital skills' and 'Statistical knowledge', instead. The same occurred in the functional competences text boxes, where respondents wrote software/tools instead. It becomes necessary to clarify these definitions. When it comes to the acquisition and development of DL related competences, it is clear that organizations don't properly promote this acquisition and development, by not using tools and methods for this. And, in terms of validation of these competences, most organizations don't use validation tools, while most respondents know or used this validation tools/frameworks. To assess DL related competences, organizations don't use all the digital tools available for this, specially e-portfolio and MOOCs (that are normally free). Most respondents, said that that they don't know open learning platforms connected to validation tools, the remaining respondents mention many online learning platforms for this.

In conclusion, we can say that this questionnaire brought to light issues regarding the lack of knowledge on validation frameworks/tools in DL related competences. Many respondents work in IT roles and similar, and don't know/use validation frameworks to validate digital skills (e.g. DigiComp). Other issue regards the digital tools used or little used by organizations, there is a need to create some awareness on the existing tools to acquire and develop DL related competences, so that organizations may use them properly and promote them among their employees/students and general population.