



EULEP

**WORKFORCE NEEDS FOR UP AND
RESKILLING IN ARTIFICIAL
INTELLIGENCE, VIRTUAL REALITY
AND SOCIAL INNOVATION**

Deliverable 2.1



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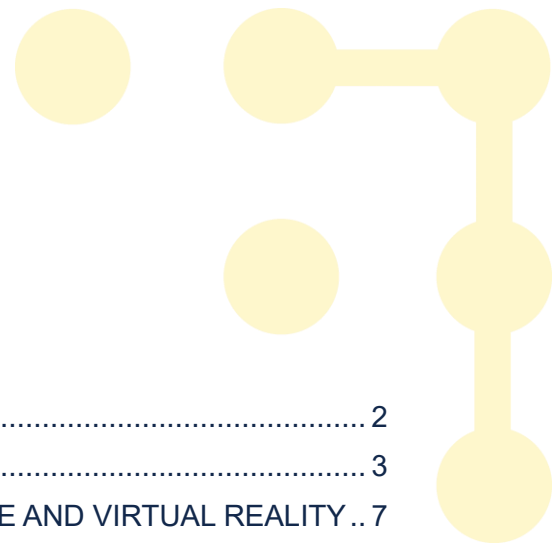


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INTRODUCTION

EULEP is the European Learning Experience Platform. It brings together 20 organisations from 8 countries under the leadership of Eurochambres.

The partners work together with the following objectives:

- Make C-VET (continuous vocational education and training) more attractive for lifelong learning;
- Offer businesses new and tailor-made training modules that correspond to their skills needs in innovation oriented subjects (artificial intelligence (AI), virtual reality (VR) and social innovation (SI));
- Upskill and reskill people with labour market relevant skills and competences in AI, VR and SI;
- Develop innovative learner-centred teaching and learning methodologies for the continuing professional development of VET trainers;
- Establish or reinforce knowledge triangles at regional and national level thanks to the triangulation business - VET provider - European Digital Innovation Hub (EDIH);
- Embed VET in regional economic development strategies and reinforce its governance, putting it on a sustainable path.

The present report is the outcome of the work done with businesses by the project partners under Work Package 2, the main objective of which is to lay the basis for the development of the training modules, following a bottom-up and end user-centred approach.

To reach that objective, the project partners engaged into research as preparatory work for taking evidence-based decisions on the learning outcomes as well as recommendations for the development of the training modules in Work Package 3.

The objectives of the research were to detect the level of awareness of businesses about and their training needs relating to Artificial Intelligence (AI), Virtual Reality (VR) and Social Innovation (SI).

The research materialized in the form of an online survey for AI and VR, and in focus groups for SI in each of the partner countries. The partnership decided to organise focus groups for SI and not rely on an online survey, as the subject was not as straightforward as AI and VR in terms of concept and information gathering. Besides, for SI mostly qualitative questions were raised (the answers to which are more difficult to obtain with online surveys).

The country results were gathered and the overall results for EULEP determined.

This report presents the findings of the research according to:

- the type of businesses involved
- their degree of digitalisation
- existing skills and training activities
- the adoption of AI and VR and related training
- the workforce skills needs in AI and VR
- the outcomes of the SI focus groups among participating countries





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EXECUTIVE SUMMARY

With their research work in the frame of Work Package 2, the project partners laid the basis for the development of the training modules, following a bottom-up and end user-centred approach.

In order to determine the skills needs of companies in the fields of AI, VR and SI, they reached out to a broad range of companies from all sectors to gather first hand input. In the case of AI and VR, online surveys were organised in the 8 participating countries. For SI, focus groups were organised, given that the subject was not as straightforward as AI and VR in terms of concept and information gathering. The country results were gathered, analysed and a list of common skills needs for the three subjects determined.

The report first presents the results of the online survey on AI and VR, prior to moving to the outcomes of the SI focus groups work.

The results of the online survey are presented in five chapters: type of businesses involved, their degree of digitalisation, skills and training activities in place, the adoption of AI and VR and related training, the workforce skills needs in AI and VR.

Businesses from all sectors were invited to reply to the online questionnaire on AI and VR, and at the end of the survey process, 717 replies were collected. Two thirds of responses come from three sectors: 49% from manufacturing, 13 % from services and 5% from IT. The remaining third is spread out widely among other sectors. Over 60% of businesses are either small or medium in terms of employees and have been active for more than 10 years.

In terms of **digitalisation**, the responding companies evidence several situations that point towards a low digital maturity. 38% of respondents have a person or department in charge of IT, and 69% spent less than 10.000 EUR for investments in technology in the previous year. Looking at the digital technologies already adopted by the respondents, having a company website is the most popular one for nearly 82% of respondents, followed by internal management software for 70%, data analysis for 57% and cloud computing for 51%. Other, more advanced technologies, are less widespread.

In a fast changing economic environment, staff with the right **skills** are an essential element for businesses' competitiveness. It would therefore be advisable for companies to have an enabling **training** environment in place. Around half of the respondents carry out regular skills assessments with their staff or have a person/department in charge of training within the company. At the same time, 73% of respondents believe that their company would benefit from IT upskilling or reskilling personnel training and 68% of respondents consider that employees are not sufficiently trained on IT. A majority furthermore thinks that employees do not have sufficient IT skills for the work they are doing, while they admit that workplace needs are the most critical factor for IT training.

The **AI adoption level** is low with around one fifth of companies using AI mainly as users of software with AI, but not as AI developers. For the companies using AI, the processes where it is mostly used across the survey are economic management, closely followed by service and/or production management and digital marketing.

Among the companies not using AI solutions, 53% declare that AI has no field of application in the company. About one third state that they don't know how to introduce AI and/or do not know the benefits of introducing AI into the company.





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It is interesting to note that, no matter whether the companies are using AI solutions or not, 54% of respondents believe that AI can improve productivity and efficiency in the company and 43% declare that AI is a benefit to the company against 2% who consider it to be a threat. A majority (55%) is not sure whether AI is a benefit or a threat.

To the question what should be improved/amended for their company to benefit from AI, all respondents reacted. Nearly one third of respondents think that a combination of measures is needed to improve the situation. 24% of respondents think that it is a question of having the right employees to drive innovation and skillset in the workforce and over one fifth consider training to be of importance.

Lastly, 62% of respondents want to adopt or increase the use of AI and most of them consider that skills play a vital role and that they need to reskill or upskill their employees or hire employees with the right knowhow.

Among the respondents, the **VR adoption level** is lower than that for AI with 14% of users. About three quarters of companies that have VR solutions in place use it as users and do not develop VR solutions. The most commonly used applications are service and/or production management and digital marketing and promotion.

Among the non-users of VR, 52% declare that they are not using VR because the company has no field of application. About three quarters of respondents have ideas for future applications in a wide range of company areas.

At the time of the survey, 12% of respondents have a virtual catalogue and 40% consider developing one.

Employees training on AI and VR is low currently with 7% of respondents training employees in AI and 6% in VR.

At the same time respondents reckon that there is a clear need for employees training in both subjects, with a greater need for AI. 76% of respondents indicate that there is a moderate to extreme need for training in AI and 61% in VR.

63% of respondents are planning AI or VR training in the future for their employees and a similar percentage thinks that a beginners level should be targeted for both subjects.

Ethics is a very important aspect when using Digital Technologies and especially when using AI or VR. For the respondents, the main concerns are privacy and data protection (27%), trust and safety (24%) and responsibility/liability (20%). The staff skills level on ethics questions is rated rather low by companies, as about 70% of them gave a score from 1 (very low) to 3 (medium).

When asked about the importance of **soft skills** for the future of the company, there is an overall consensus across the survey, with 81% of positive replies, that soft skills are important for the future of the company. Less than one fifth of respondents do not make a link between the staff's soft skills and the future of the company.

As a conclusion from the survey responses, the project partners decided to target potential users of AI/VR (i.e. non-technicians) with the training under EULEP. The learning outcomes to be developed should provide awareness of the different applications of AI and VR and their benefits as well as supporting their adoption, including the needed soft skills for dealing with the transition process.





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Based on the results of the survey, the project partners elaborated a list of potential AI and VR training content:

1. Adopting new IT technologies at the company and Digital Transformation
2. Introduction to Artificial Intelligence
3. Applications and Benefits of AI in different companies/sectors areas
4. Introduction to Virtual Reality
5. Applications and Benefits of VR in different companies/sectors areas
6. Workplace needs, skills assessments, and employees training
7. Ethics related to AI and VR: Privacy and Data Protection, Trust and Safety, Responsibility/Liability
8. Planning AI and VR employees training
9. Soft Skills for employees in the context new digital technology adoption (Related to SI)

In the context of the project, **social innovation** (SI) is being looked at as a tool for accompanying companies in their digital transitions, and particularly in the adoption of AI and VR.

In each of the participating countries, the partners organised focus groups with companies in the form of a guided discussion on SI based on commonly agreed guidelines. In total 57 companies took part in the sessions and discussed their company's awareness about SI, as well as the challenges that would prevent them from engaging in SI. Based on these two factors, the skills needs were determined.

According to the results of the focus groups, social innovation was seen as increasingly being on the agenda of companies in recent years, not least because of the legal framework they are operating under and regulations that require companies to think and act differently.

The **main drivers** for companies to engage in SI are to increase their brand image and customer loyalty, to create positive social change, to contribute to local and global sustainability, to respond to the needs of customers and society and thereby to enhance the sustainability of their businesses.

Companies face different **challenges** for the implementation of SI. The challenges range from a lack of awareness, inadequate social understanding and lack of skills of employees, over lack of communication and management support, to company inherent structural issues (centralised, top-down structures) and general resistance to change.

When questioned about the **skills needed** for engaging in SI, and overcoming the related challenges, the focus group participants mentioned a long list of skills needs.

Teamwork emerges as the most frequently expressed need for developing SI in a company. It is followed by awareness, communication skills and digital skills. The top ten skills needs are completed by business development, decision making, recognising opportunities, resilience, resource mobilisation and mentoring.

The Entrepreneurship Competences (**EntreComp**) Framework of the European Commission identifies the competences that make someone entrepreneurial. Being entrepreneurial enables people to act and transform ideas and opportunities into shared value. Thereby they increase innovation and employment.





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The skill needs highlighted by the EULEP SI focus groups have been matched with the competences defined in the EntreComp Framework, and six EntreComp competences were selected to define learning outcomes under EULEP:

1. Working with others
2. Mobilizing resources, mobilizing others
3. Taking initiative
4. Creative Thinking
5. Spotting opportunities
6. Ethical and sustainable thinking





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WORKFORCE SKILLS NEEDS IN ARTIFICIAL INTELLIGENCE AND VIRTUAL REALITY

THE TARGET GROUP - TYPE OF BUSINESSES INVOLVED

During the preparation phase of the survey, the project partners engaged in a discussion about what companies to target with the EULEP trainings. As one of the objectives of EULEP is to reach out to as many sectors as possible, and develop training curricula that can be used across sectors, it was decided to reach out to a broad base of companies in order to detect the training needs in AI, VR and SI.

The Chambers and Training providers relied on their databases for reaching out to businesses through e-mail campaigns as well as direct communication.

They contacted management members knowledgeable of the company's digital transformation strategy, human resources managers, or business owners in the case of SMEs.

The survey targeted businesses from the partners' countries in all activity sectors, all sizes and with different grades of maturity.

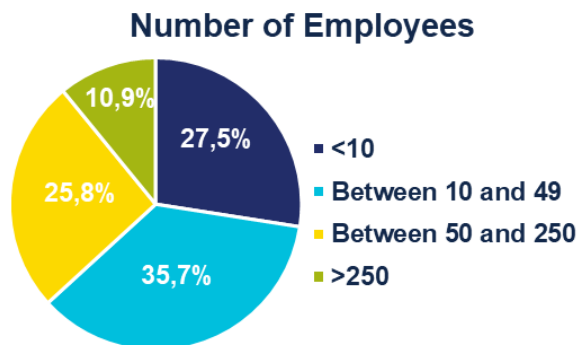
Partner Countries	Number of companies responding to the online survey on AI and VR
Austria (AT)	61
Belgium (BE)	40
Cyprus (CY)	26
France (FR)	11
Italy (IT)	53
Latvia (LV)	50
Spain (ES)	46
Türkiye (TR)	430
Total	717

In total, 717 replies were obtained, and one can notice the high number of replies from Turkey.

Three sectors stand out in terms of number of responses adding up to 66,6%: 49% from manufacturing, 13 % from services and 5% from IT. The remaining 33,4% are spread out widely among the other sectors.

As shown in the graph below, around 62% of responding businesses belong to the small or medium category of companies in terms of employees. In terms of maturity, about 65% of companies have been active for more than 10 years, and over half of them are active either

locally/regionally or nationally. One quarter is active on the European market and less than one fifth internationally.





DEGREE OF DIGITALISATION

As EULEP wants to develop training in the field of AI and VR that is useful to companies, the partners first wanted to check the current digitalisation degree of companies, to see how advanced the latter are in their digitalisation process.

The survey questions ranged from whether there is a department or staff member dedicated to IT and the IT investment made in the previous year, to digital technologies already in place.

Based on the assumption that companies most advanced in digitalisation count on specialised staff who can better deal with new digital technologies, businesses were asked if they had a department or staff member dedicated to IT.

Considering that 38% of respondents have a **department or staff member dedicated to IT**, one would tend to believe that the companies' digitalisation level is not very high.

The chart highlights the differences between countries, whereby the 7 EU member states appear all more advanced than Türkiye; and among the EU member states, the businesses sample from Spain is in the lead.

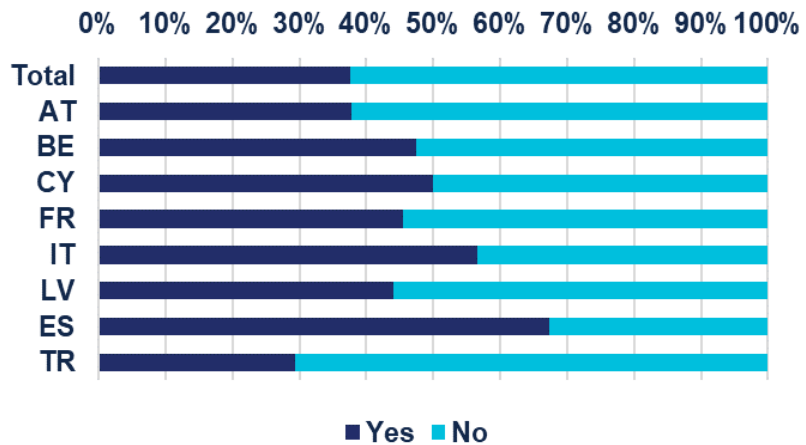
Another relevant question was the amount of **investment in technology** (hardware, software, internet connection, etc.) that the company had made over

the last year. Investment in IT was less than 3.000 EUR for 27% of respondents and between 3.000 and 10.000 EUR for 42% of respondents. The remaining 31% of respondents had spent more than 10.000 EUR the previous year for IT investments. With 69% of respondents having spent less than 10.000 EUR the previous year on IT, and assuming that this is the businesses usual investment level, there is little room for ambitious digital transformation projects.

Looking at the **digital technologies already adopted** by the respondent companies, the own website is the most popular one for nearly 82% of respondents, followed by internal management software for 70%, data analysis for 57% and cloud computing for 51%. Less than half of responding companies have technologies in place such as CRM (47%), mobile apps (42%), machine learning (39%), e-commerce (35%), anomaly detection (33%), loyalty systems (33%), forecasting, price optimisation, decision making (27%) and Internet of Things (22%).

In all participating countries having a website is the most popular digital technology in place except in Latvia where more companies have internal management and cloud computing processes in place, and in Spain where companies prioritize internal management to having a website.

Does the company have a department or staff member dedicated to IT?





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Considering above replies, and the fact that websites and internal management processes nowadays belong to the categories of basic technologies, there is clearly room for improvement when it comes to the adoption of more advanced technologies (like those involving AI or VR).

SKILLS AND TRAINING IN RESPONDING COMPANIES

In a fast-changing economic environment, businesses need to adapt to remain competitive. In order to remain competitive, businesses do not only need to adapt their working methods/processes, they also need to have staff with the right skills.

EULEP wants to develop training for working people, employees, managers and other target groups who need to update their skills in order to cope with the adoption of AI and VR in companies. As such, the activities are linked to lifelong learning and will ultimately contribute to the European Union's overarching goals of increasing the number of adults aged 25-64 in learning, and to improve their digital skills levels.

For people to engage in lifelong learning, an enabling training environment needs to be in place. Given that EULEP wants to provide training to companies and their staff, the partners first wanted to find out if businesses have an enabling training environment in place.

The questions ranged from the implementation of regular skills assessments, over the existence of a department or person in charge of trainings, an assessment of IT training in the company and in line with workplace needs, the provision of training to staff, to the most critical factors for the company in IT training.

Some 51% of responding businesses carry out **regular skills assessments** with their employees. Looking at the country results, the figures vary greatly: in Italy, 81% of companies have regular skills assessments in place, followed by France (73%), Spain (63%), Belgium (58%), Türkiye (49,8%), Cyprus (46,2%), Austria (37,7%) and Latvia (32%).

The situation is similar regarding the existence of an **employee or department that is in charge of staff training** with 50% of businesses responding positively to the question. There are again country variations, but less pronounced than for the previous question. Belgian respondents rank first with 68% of positive answers, followed by Spain (63%), Italy (59%), Cyprus (53,8%), Türkiye (48%), France (46%), Latvia (42%), and Austria (39%).

73% of respondents believe that their company would benefit from **IT upskilling or reskilling** personnel training, while 27% don't think so. Along the same line, 68% of respondents consider that employees are not sufficiently trained in IT.

When asked if the company's employees are sufficiently **skilled in information technology**, 53% of respondents consider that employees do not have sufficient IT skills for the work they are doing.

With view to the above points it is encouraging to see that 62% of respondents offered or supported **training for employees** in the preceding year. At the same time this means that 38% didn't, pointing towards a need for more awareness raising with businesses about employees training and active support in setting up and implementing training.

When asked what is the **most critical for the company, specifically in IT training**, workplace needs is the dominant answer in all countries. Employees training background or age plays a lesser role. It is nevertheless noteworthy that companies consider a combination



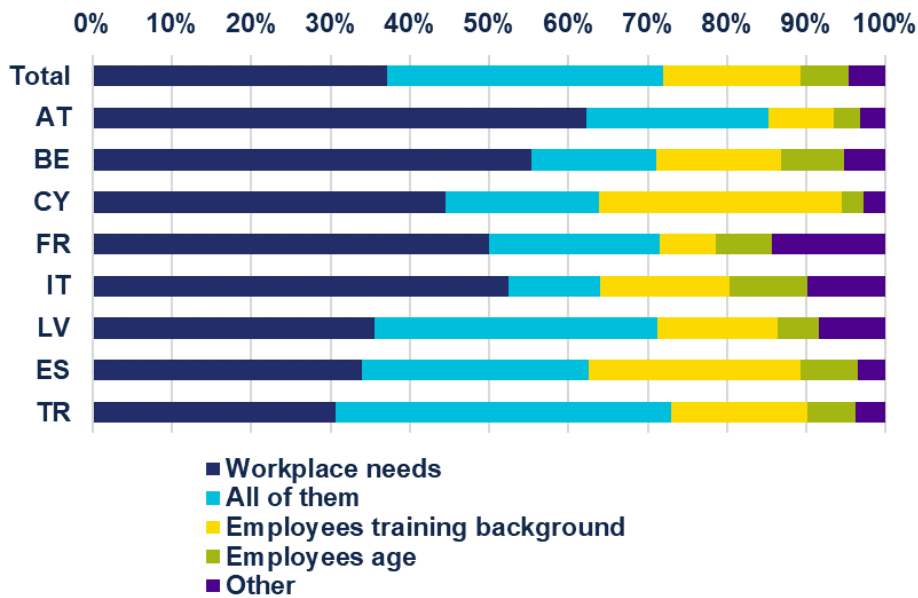


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of workplace needs, employees training background and age to be relevant as it scores second.

In five out of the eight participating countries the same trend can be observed in terms of ranking. In Cyprus and Italy, employees training background ranks second, behind the workplace needs and before the combination of all three factors. For Türkiye respondents, the combination of the three factors is more important than the workplace needs.

What is most critical for the company in IT training?



AI/VR ADOPTION AND TRAINING

After investigating the general digital technologies level of the companies and their training policies (in general and for IT), the project partners wanted to find out how aware companies are about the adoption of AI and VR, how many of them are using these new technologies and what the impediments are for using it. They furthermore enquired with companies about the potential benefits/threats of AI/VR for the company and what needs to be done to improve the situation, besides looking into the currently used fields of application. They subsequently enquired about the readiness of companies to increase the uptake of these new technologies. And finally, the question of ethics with the usage of these technologies was raised, together with the importance of soft skills for the future of the company.

The replies to the different questions are presented hereafter, first for AI, and then for VR, and lastly the answers related to ethics and staff's soft skills.





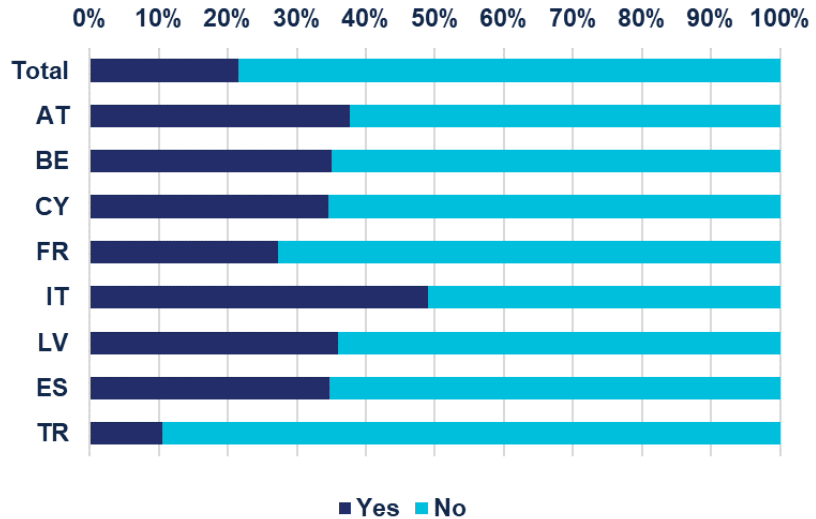
ARTIFICIAL INTELLIGENCE

Overall, 79% of respondents are not using Artificial Intelligence solutions. 21% are using some solutions.

As can be seen in the graph, Turkey is the country with least use of AI solutions. On the other side, Austria and Italy are the frontrunners with 39% and 45% respectively.

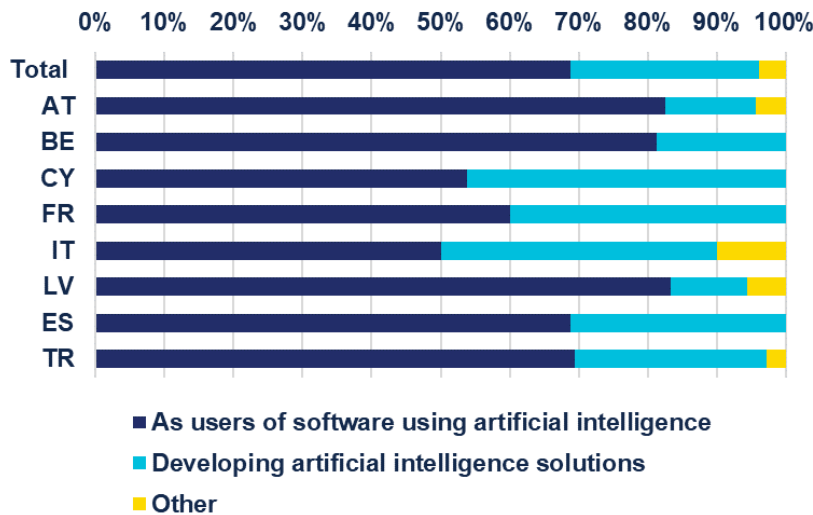
Among the 21 % of companies that are using AI solutions, 69% are users of software with AI and 27% develop AI solutions.

Do you use artificial intelligence solutions at your company?



The trend is similar in all countries except in Cyprus, France and Italy where there is a somewhat higher share of AI solutions developers among the companies using AI.

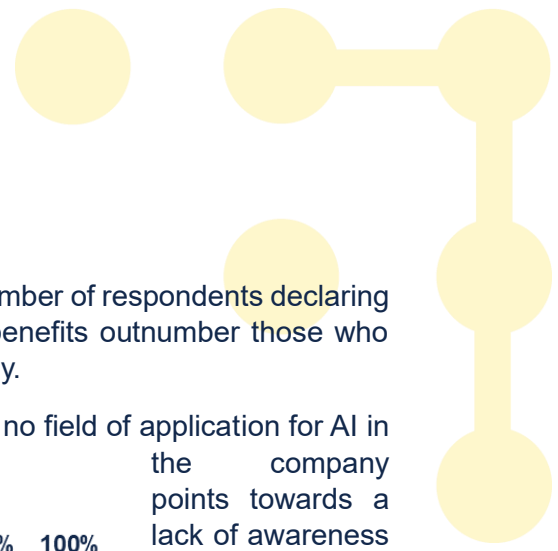
If yes, how do you use Artificial Intelligence?



The fact that most of the AI using companies declare being users of software and not developing AI solutions is important, and based on this EULEP will seek to address “users” skills needs and not those of “developers”.

Among the companies **not using AI solutions**, 53% declare that AI has no field of application in the company. About one third state that they don't know how to introduce AI and/or do not know the benefits of introducing AI into the company. A lack of skills of the company workforce comes last with 14%.

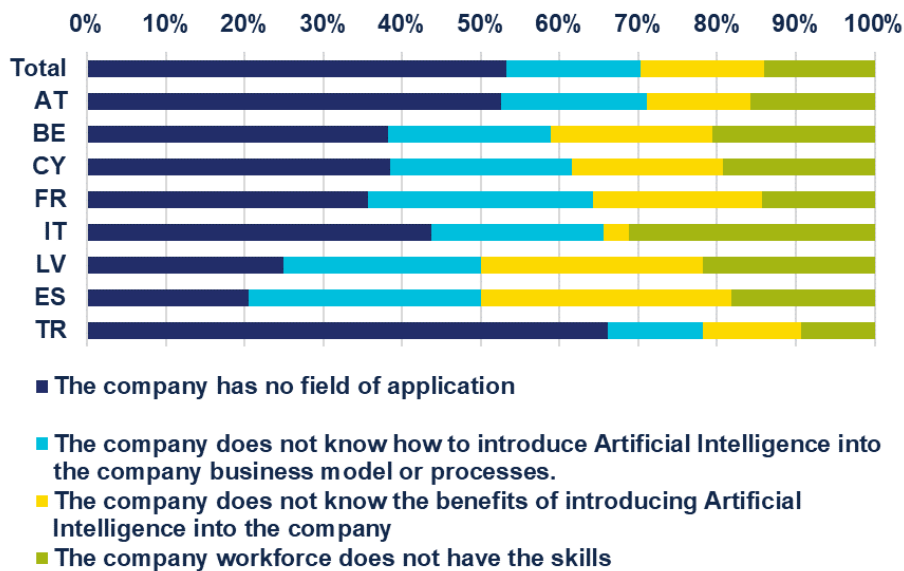




The chart shows that except for Austria, Italy and Turkey, the number of respondents declaring not to know how to introduce AI and not being aware of its benefits outnumber those who indicate that there is no field of application for AI in the company.

The fact that over half of the respondents indicate that there is no field of application for AI in the company points towards a lack of awareness by companies about the broad range of AI solutions available.

If not, why don't you use Artificial Intelligence?

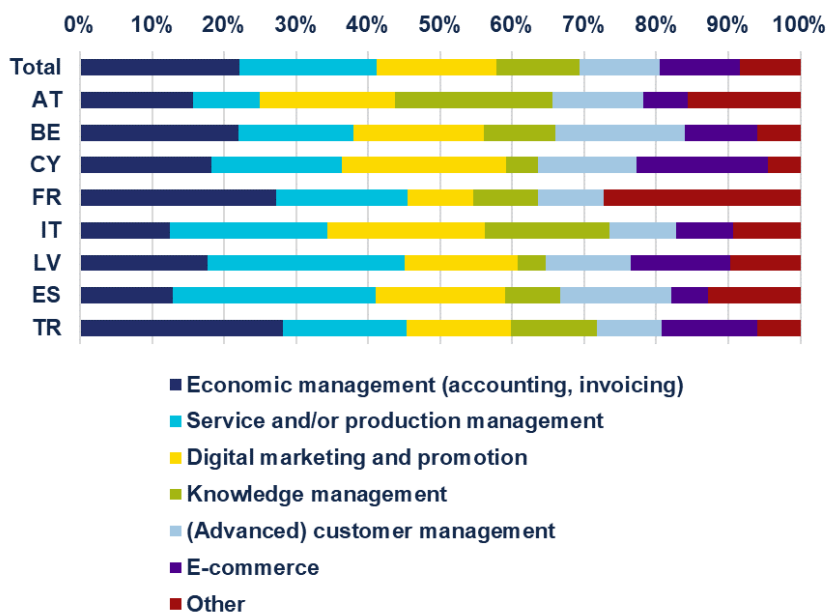


the company points towards a lack of awareness by companies about the broad range of AI solutions available.

If this lack of awareness is combined with the other hindering factors, then there is great room for manoeuvre on awareness raising and first level introduction sessions.

For the companies using Artificial Intelligence, the **processes where AI is mostly used** across the survey are economic management, closely followed by service and/or production management and digital marketing. The country results vary. In Austria, knowledge management ranks first, in Cyprus digital marketing. In Italy, both service and/or product management and digital marketing come first, and in Latvia and Spain service and/or production management are at the top of the list.

In which of the following processes does the company currently use Artificial Intelligence?



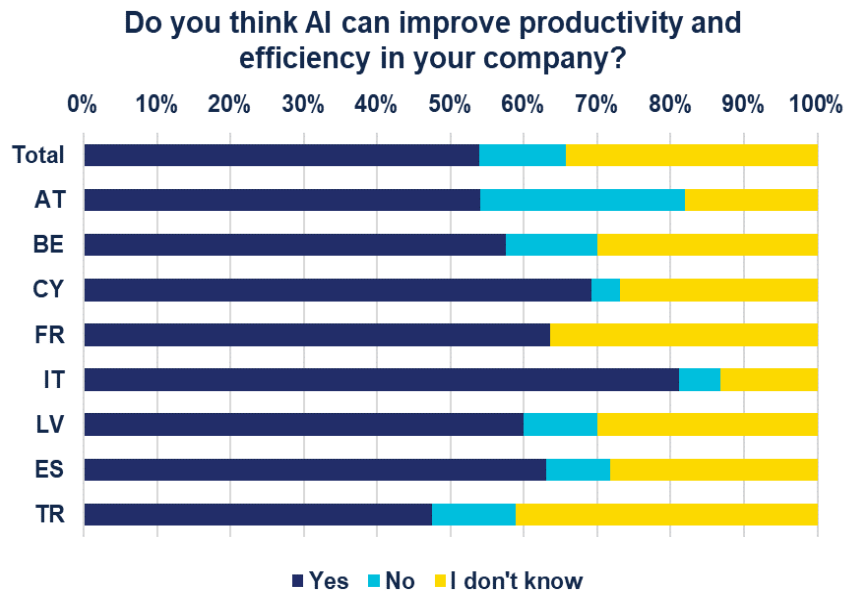
When looking at these results, one should bear in mind that they relate to 21% of all respondents.





It is interesting to note that, no matter whether the companies are using AI solutions or not, there is an overall perception that AI can **improve productivity and efficiency** in the company, as 54% of respondents clearly state yes. One third of respondents don't know, which leaves a small number of respondents who don't think that it will help.

In all countries the number of positive replies prevails, except in Turkey where less than half of the respondents think that AI can improve productivity and efficiency in the company. Turkey and France are the countries where the “I don't know” answers are above the survey average. In Austria, the number of negative replies outweighs the “I don't know” category with over one quarter of respondents saying “No”.



This overall result (see chart below) reinforces the already stated need for increased awareness about the benefits AI can bring businesses and what it can be used for.

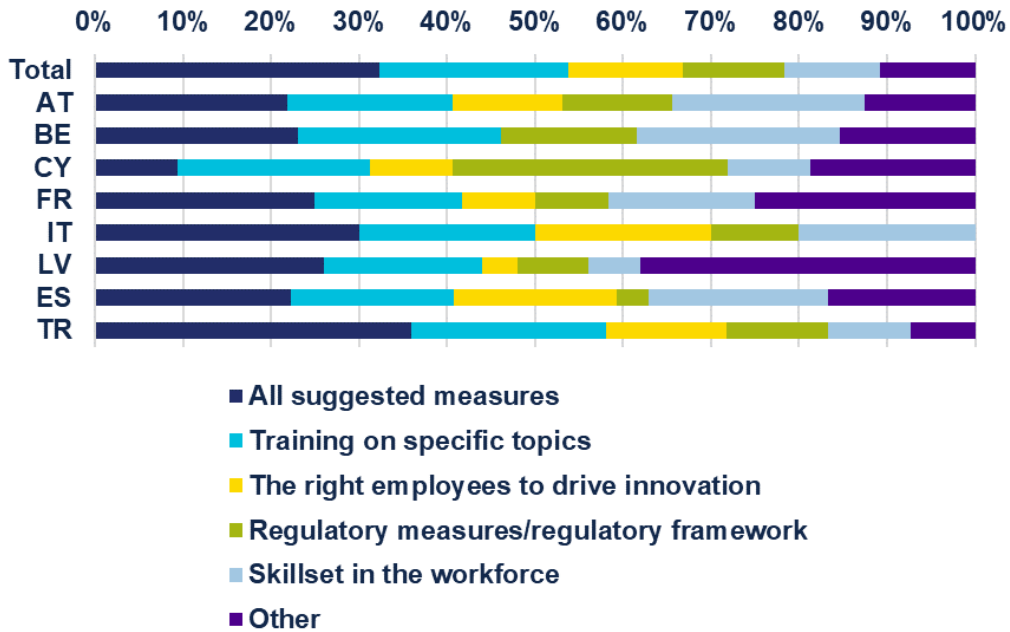
It is also important that 43% of respondents declare that **AI is a benefit to the company** against 2% who consider it to be **a threat**. Nevertheless, the majority (55%) state that they are not sure.

The respondents who considered AI to be a threat for their company were asked **what should be improved/amended for their company to benefit from AI**. The question met with a lot of resonance from all companies taking part in the survey, and consequently the chart below reflects the answers of all respondents. This may also be a sign that no matter whether companies consider AI to be beneficial or a threat to their companies, they all believe that measures should be taken to improve the current situation.

Nearly one third of respondents think that a combination of measures is needed to improve the situation. 24% of respondents think that it is a question of having the right employees to drive innovation and skillset in the workforce and over one fifth consider training to be of importance. Regulatory measures appear overall to be less important, except in Cyprus where 31% of answers call for changes in the regulatory framework.



What should be improved/amended for your company to benefit from AI?



When asked if they want to **adopt or increase the use of Artificial Intelligence**, 38% of responding companies declare that they don't intend to adopt or increase the use of AI. A second group of respondents want to adopt or increase the use of AI but have to deal with specific issues: 36% need to reskill or upskill their employees and 9% are looking for employees with the know-how. Lastly 16% answer positively and state that they have staff with the right skillset for it.

Looking at the group of respondents with specific issues, the need for training, reskilling and upskilling in AI as a prerequisite for its adoption becomes evident.



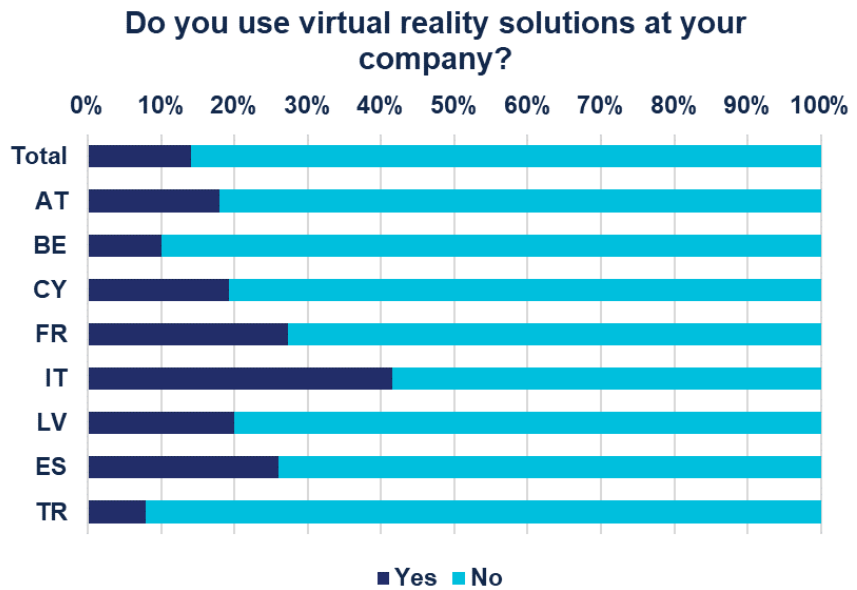


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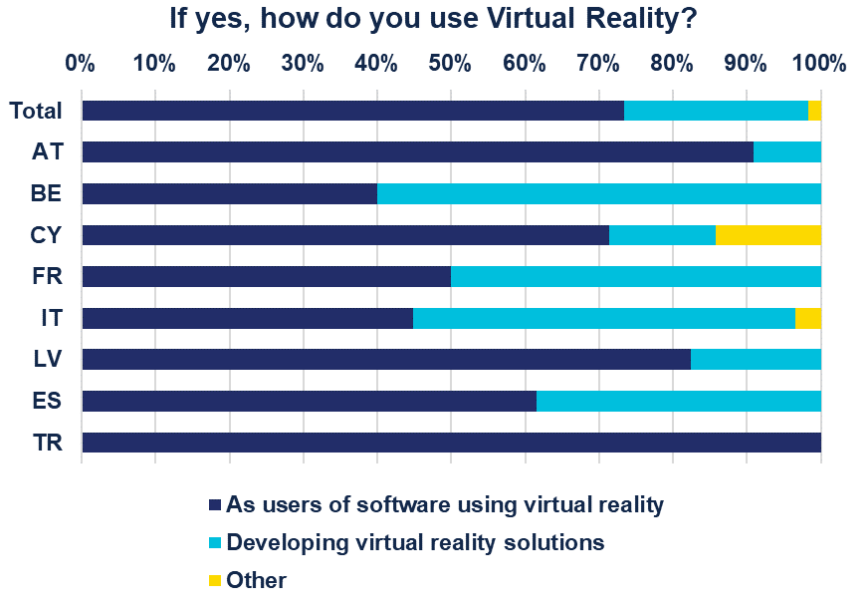
VIRTUAL REALITY

An overwhelming majority of respondents (86 %) declare that their companies do not **use VR solutions**, against 14% that use this technology.

The frontrunners using this technology are Italy with 42% of respondents responding positively, France with 27% and Spain with 26%.



The companies using Virtual reality are mostly using it as users (73%), not as developers of Virtual Reality solutions (25%).

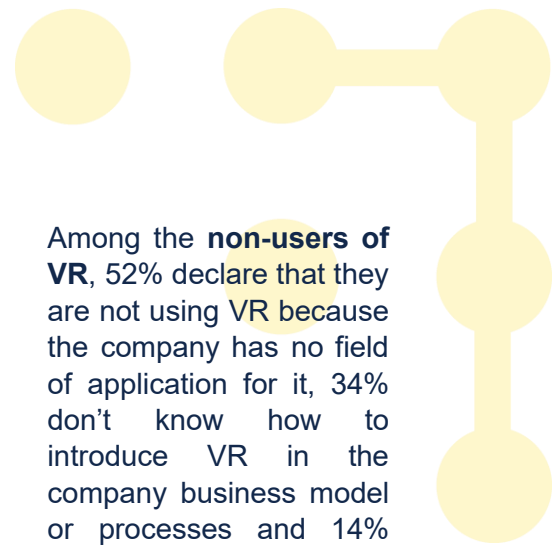


Overall, a limited number of businesses replied to that question (taking into account the low uptake of VR among the survey respondents) and considering this, the country answers are to be considered from a qualitative perspective.

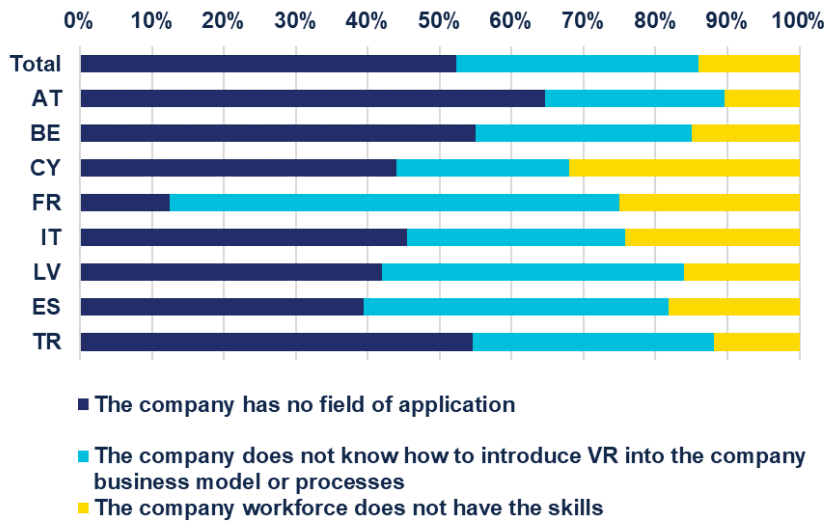
To the question relating to their **current usage of VR**, 12% responded that they are using this technology for service and/or production management, 9% for

digital marketing and promotion, 6% for personnel training and e-commerce respectively and 4% for user manuals.





If no, why don't you use virtual reality?



Among the **non-users of VR**, 52% declare that they are not using VR because the company has no field of application for it, 34% don't know how to introduce VR in the company business model or processes and 14% declare that the workforce doesn't have the necessary skills.

Slightly less than half of the respondents indicate that they don't know how to introduce VR and that there are skills issues

among the workforce. This offers definitely room for intervention with businesses on awareness raising about VR applications and specific training courses for the introduction of the technology.

At the same time, businesses were asked about **possible future uses of VR** in the company. While 24% of respondents don't know what they could use the technology for in the future and 4% mention that they would not use it, 73% of respondents have ideas for future applications, starting with digital marketing and promotion (18%), service and production management (17%), personnel training (13%), e-commerce (11%), user testing (8%) and user manuals (6%).

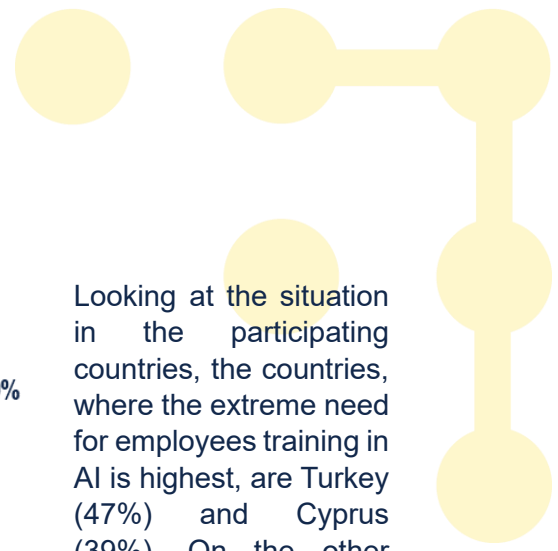
Concerning the usage of a **virtual catalogue**, 12% of respondents already have a virtual catalogue. 40% of companies answered that they are considering its usage, while 48% declare that they don't consider this possibility.

SKILLS AND TRAINING IN ARTIFICIAL INTELLIGENCE AND VIRTUAL REALITY

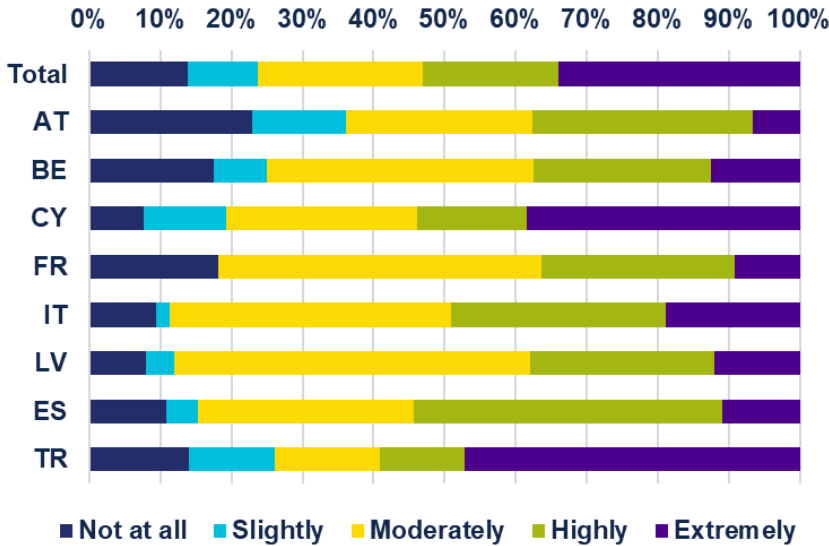
Employees training on AI and VR is low currently with 7% of respondents training employees in AI and 6% in VR.

At the same time respondents reckon that there is a clear **need for employees training** in both subjects, with a greater need for AI. 76% and 61% of respondents indicated that there is a moderate to extreme need for training respectively in AI (34% of extreme need) and VR (20% extreme).





Do you think that your employees need training on Artificial Intelligence?

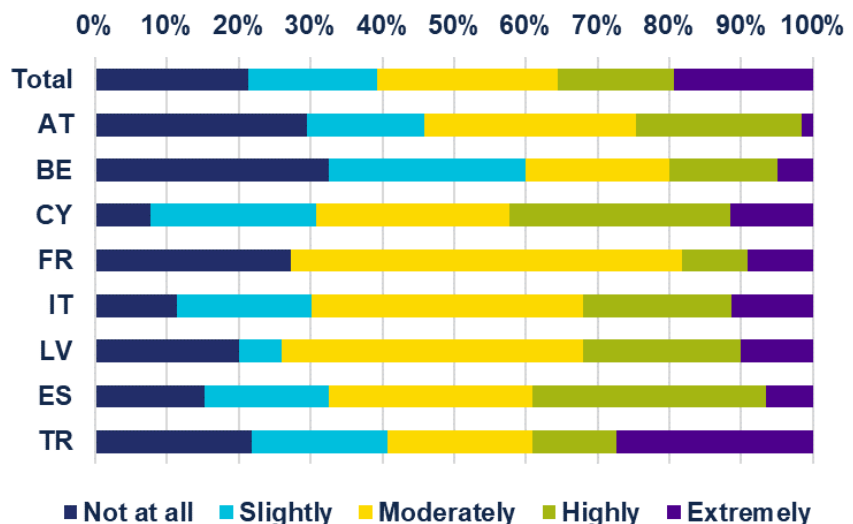


Looking at the situation in the participating countries, the countries, where the extreme need for employees training in AI is highest, are Turkey (47%) and Cyprus (39%). On the other side, Austria is the country with the highest percentage of respondents declaring that their employees don't need training on AI (23%).

For VR, the “moderate” training need (25%) is stronger than the “high” (16%) or “extreme” (19%) ones. In Austria, France, Italy and Latvia the “moderate” need prevails. In Cyprus and Spain, companies express more “high” training needs than “extreme” or “moderate” ones. The only country where “extreme” training needs prevail is Turkey.

Given that over one fifth of respondents state that their employees do not need training in VR, the overall training need for VR appears to be lower than for AI. In Austria, Belgium, France and Türkiye the number of respondents stating that no VR training for employees is needed exceeds the survey average.

Do you think that your employees need training in Virtual Reality?



Businesses recognize the need for training in both AI and VR, as seen above, and they intend to move ahead, as 63% of respondents are **planning AI or VR training in the future** for their employees.

When questioned about the **training level to be applied** for their employees, 61% of respondents declare that for AI and VR training a beginners level should be targeted. 27% consider that an intermediate level and 11% consider that an advanced level should be





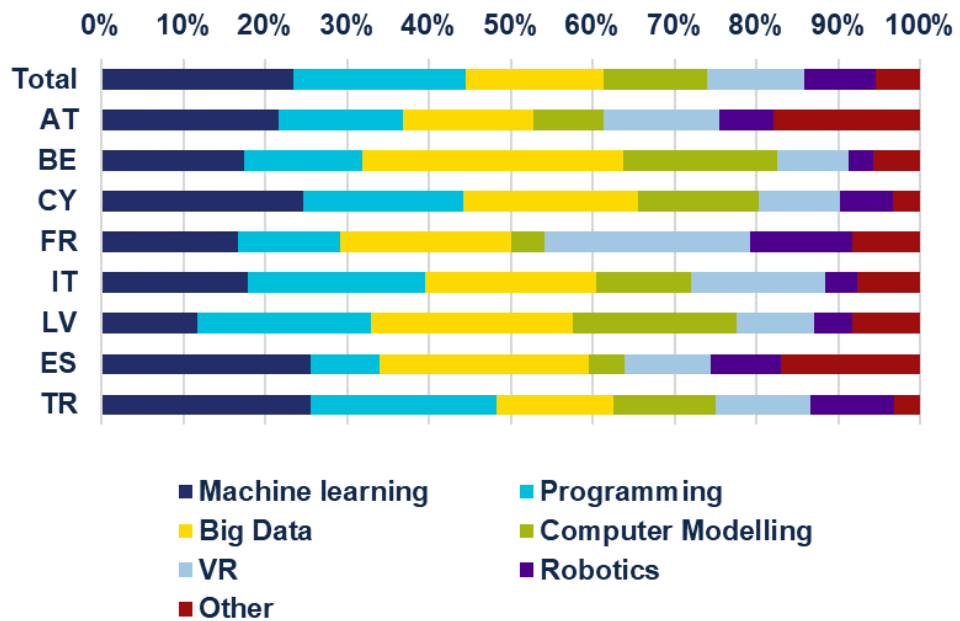
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applied. There are some variations between intermediate and advanced level trainings between the participating countries, but the overall trend is the same.

Companies were also asked about the **IT skills** that are **needed for new employees**: top on the list is machine learning (23% of respondents), followed by programming (21%), big data (17%), computer modelling (13%), VR (12%), robotics (9%), and 5% of other IT more basic skills.

The country results vary. In Belgium and Latvia for instance big data ranks first. In Spain, big data ranks first as well, at the same level as machine learning. In France, VR tops the ranking, while programming comes first in Italy. In the other countries, machine learning ranks highest.

Which of the following IT skills are necessary for new employees?

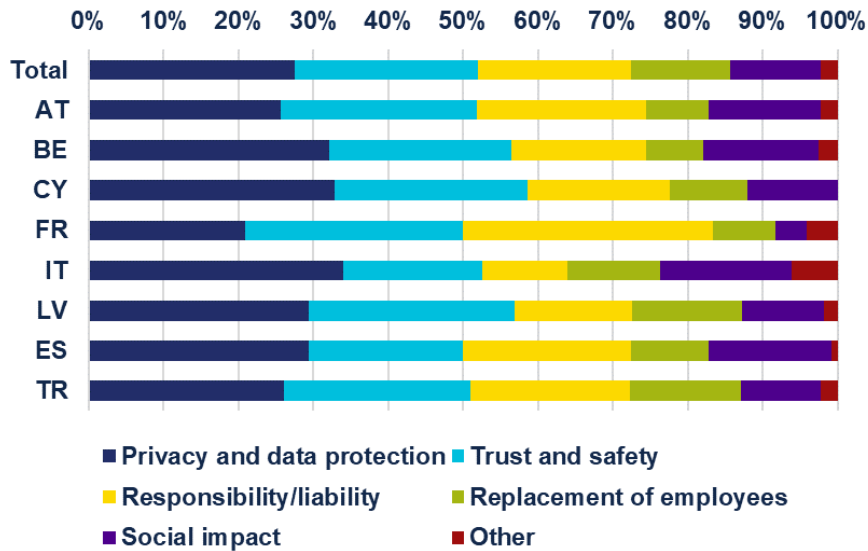


Ethics is a very important aspect when using Digital Technologies and especially when using AI or VR.

For the respondents, the main concerns are privacy and data protection (27%), trust and safety (24%) and responsibility/liability (20%). The replacement of employees and social impact are of lesser concern to the responding businesses. In six out of eight countries privacy and data protection comes first. In Austria, businesses consider trust and safety as major concern, while in France responsibility/liability ranks highest, as shown in after mentioned graph.



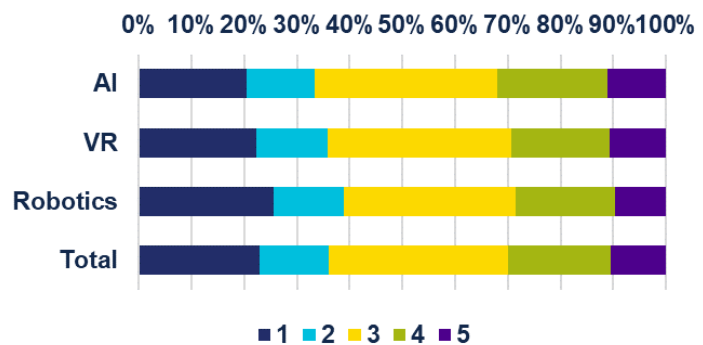
Which aspects related to ethics when using technology in your company worries you the most?



Companies were asked to rate their **staff skills on ethics** and AI, ethics and VR, and ethics and robotics. For each of the subjects, a range from 1 (minimum) to 5 (maximum) was applied.

The graph shows that staff skills levels in the three areas are very similar. Looking at the individual skills levels, the responding businesses consider their staff skills levels related to ethics to be medium, as a third of respondents (34%) indicate 3. The medium ethics skills levels for AI and VR are identical (35% of respondents in each case).

Rate from 1 to 5 the staff skills on ethics and...



For AI, there are slightly more respondents who consider that the ethics skills level of their staff is on the low side (33%) rather than on the high side (32%). The picture varies in the participating countries. In Belgium, France, Italy and Spain for instance, 45-50% of respondents consider their staff's ethics skills levels to be on the low side (levels 1 and 2). In Austria, Cyprus and Latvia, around 40% of respondents indicate levels 4 and 5, meaning they consider their staff to have a good to very good ethics skills level. In these three countries, the results for medium level skills (3) are in line with the overall result for AI.





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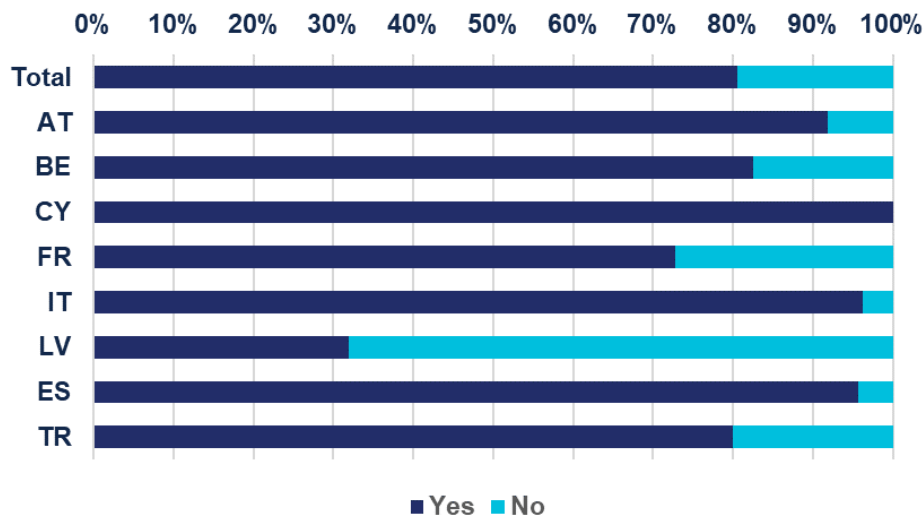
For VR, the difference between low and high level ethics skills is more pronounced. 36% of respondents consider their staff's ethics skills level to be on the low side (levels 1 and 2), while 29% consider them to be on the high side (levels 4 and 5).

In Belgium and Italy, over half of the respondents indicate a low VR ethics skills level for their staff; in Cyprus, France and Spain, the results range from 39% to 44%. In Austria (38%) and Latvia (42%) on the contrary, there are more businesses who consider their staff's VR ethics skills level to be on the high side than on the low side.

When asked about the **importance of soft skills for the future of the company**, there is overall consensus across the survey, with 81% of positive replies, that soft skills are important for the future of the company. Less than one fifth of respondents do not make a link between the staff's soft skills and the future of the company.

Responses from Latvia are not in line with the general trend, as the negative replies outweigh the positive ones. It could be interesting, in the frame of a future survey, to analyse the reasons for this position adopted by Latvian businesses.

Do you consider soft skills, capabilities and attributes such as emotional intelligence, creativity, adaptability, resilience and vision of staff are important for the future of the company?





CONCLUSIONS

Limited digitalisation: While the vast majority of respondents have basic digital tools in place like a company website or internal management tools, the presence of AI or VR applications among the surveyed companies is very limited.

This leads to the possibility for more awareness raising and strategy formation related to these more advanced digital technologies and their applications, combined with introduction courses on how to implement the adoption of new technologies such as AI and VR.

Employees training: 51% of respondents have regular skills gaps assessments in place, and 50% of respondents have an employee or department in charge of training. 62% of the companies offered training for employees in the previous year. Given that 63% of the respondents have micro or small companies, these results are encouraging (meaning that there is also training in those companies).

Considering that about half of respondents do not have skills gaps assessments in place, and that half of the respondents do not have anybody in charge of training, there is a lot of room for improving the situation. To start with, trainers would need to be trained so that they can help companies carry out skills gaps assessments and organise training. In a second step, the trainers could assist small and medium sized companies getting familiar with AI and VR and train their employees on the subject.

IT training: The responding companies have a good insight into their IT landscape and training situation. 73% consider that IT personnel upskilling and reskilling benefits the company and 53% are aware that employees' IT skills are not in line with workplace needs. There is clearly room for intervention on IT training adapted to the workplace needs.

Low use of AI: The online questionnaire has revealed that most companies are not using AI solutions, although a majority believes that AI can improve productivity and efficiency. 53% of respondents believe that there is no field of application for AI in the company, and this opens up the way to awareness raising about AI applications and their fields of intervention.

AI training: Given the low AI usage level among the survey respondents, it comes as no surprise that 93% have not implemented AI training before. Given that 62% of respondents want to adopt or increase the use of AI at their company, staff training becomes necessary, and this is recognised by 86% of respondents. They furthermore estimate that staff need mostly beginner or intermediate level courses. This means that there is a need for training both trainers and final AI users. The learning outcomes should take the desired courses levels into account.

Low use of VR: The online questionnaire has revealed that 86% of companies are not using VR solutions and that more than half of them believe that their company has no field of application for it. Like for AI, there is a need for training modules that help learners gain awareness of possible VR applications in their companies.

VR training: The situation in VR training is similar to that in AI. 94% of respondents have not conducted training in VR so far. Nevertheless 73% of respondents have plans for using VR in the future, and 79% reckon that their staff need training in VR. They furthermore estimate that staff need mostly beginners or intermediate level courses. This means that there is a need for





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training both trainers and final VR users. The learning outcomes should take the desired courses levels into account.

Ethics and technology: The most worrying aspects when using technology are privacy and data protection, trust and safety, responsibility and liability. This must be taken into account for the design of the training modules and learning outcomes.

Soft skills: 81% of respondents consider soft skills like creativity, resilience, emotional intelligence and vision very important for the future of the company. This must be taken into account for the design of the training modules and learning outcomes.

End user target groups: Most of the respondents are SMEs, micro, small and medium companies. Due to the very small size, micro-companies will not be the primary target group of EULEP, even though they will not be excluded. The trainings should be offered more to small and medium sized companies, where they will target company owners and/or digital transformation managers prior to reaching out to the broader work force. EULEP should also target trainers who will assist companies with the transition process.

Taking into account that for the small minority of companies already using AI and VR, they declare being users of the technologies and not developers, the EULEP learner profile will be that of a user (and a non-technician).

In a nutshell, the learning outcomes to be developed should provide awareness of the different applications of AI and VR and their benefits as well as supporting their adoption, including the needed soft skills for dealing with the transition process.

Based on the results of the survey, the project partners elaborated a list of **potential AI and VR training content:**

1. Adopting new IT technologies at the company and Digital Transformation
2. Introduction to Artificial Intelligence
3. Applications and Benefits of AI in different companies/sectors areas
4. Introduction to Virtual Reality
5. Applications and Benefits of VR in different companies/sectors areas
6. Workplace needs, skills assessments, and employees training
7. Ethics related to AI and VR: Privacy and Data Protection, Trust and Safety, Responsibility/Liability
8. Planning AI and VR employees training
9. Soft Skills for employees in the context new digital technology adoption (Related to SI Learning Outcomes)





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WORKFORCE SKILLS NEEDS IN SOCIAL INNOVATION

SOCIAL INNOVATION IN THE FRAMEWORK OF EULEP

In the context of the project, social innovation (SI) is being looked at as a tool for accompanying companies in their digital transitions, and particularly in the adoption of AI and VR. The introduction of these new technologies can have a disruptive effect on enterprises' human resources structure. Employees will not only have to be trained in the new technologies, but they will also be faced with changes in the enterprises' operating structure, leading potentially to changes in the workforce structure. Social innovation can help mitigate the effects of the changes and help employees navigate the changes successfully by inventing new forms of cooperation.

In the frame of EULEP there are two main approaches to social innovation: one company internal component that is to deal with changes inside of the company generated by the introduction of new technologies/processes, also known as change management, and a second component linked to the company's external environment (customers, social environment, environment, suppliers...), linked to "corporate social responsibility".

DESCRIPTION OF FOCUS GROUP APPROACH AND COMPANY SAMPLE

The objective of the survey work under work package 2 is to gather businesses' training needs and define learning outcomes for the three selected subjects: AI, VR and SI. The project partners agreed on an online survey to be carried out with companies for AI and VR. For SI, given that it is a broad concept that may not always be fully understood by companies, they decided to proceed with the organisation of focus groups to gather the skills needs for the subject.

In each of the participating countries, the partners were to gather 10 companies to take part in a guided discussion on SI. A "Guideline and Discussion Questions" document was prepared and shared with partners before the focus groups meetings were held.

Each partner organised either face-to-face or online focus groups meetings. The companies participating in the focus groups are SMEs operating in different sectors. Given the limited companies sample it was not possible to determine a dominant activities sector when analysing the results, and companies from a wide range of sectors such as organic farming, technology and management consultancy, product design, textile, energy, pharmaceuticals, beauty and hair design, medical devices took part in the meetings.

The partners prepared individual focus group reports, summarising the outcomes of their discussions. These reports were analysed and the final outcome of this analysis is presented in the following sections. For the sake of conciseness, and given the fact that one set of learning outcomes is to be defined for EULEP, individual country reports are not included in the present report.

The number of companies for each country focus group is indicated in the table.



During the focus group meetings, companies awareness about SI was discussed, as well as the challenges that would prevent them from engaging in SI. Based on these two factors, the skills needs were determined.

The Entrecomp framework is being used to translate the skills needs into learning outcomes, targeting key soft skills that are useful in this context.

Partner Countries	Number of Companies in SI Focus Groups
Austria	8
Belgium	10
Cyprus	5
France	6
Italy	12
Latvia	4
Spain	4
Turkey	8
Total	57

AWARENESS AMONG COMPANIES ABOUT SOCIAL INNOVATION

Based on the focus groups results, social innovation has increasingly been on the agenda of companies in recent years, not least because of the legal framework they are operating under and regulations that require companies to think and act differently. Companies tend to implement various social innovation strategies that aim to generate positive social and environmental impacts. Considering this, it is possible to conclude that public authorities play a role in the adoption of businesses' SI initiatives by implementing legal frameworks that bring social values to the forefront in the field of innovation.

The main drivers for companies to engage in SI are to increase their brand image and customer loyalty, to create positive social change, to contribute to local and global sustainability, to respond to the needs of customers and society and thereby to enhance the sustainability of their businesses.

Common types of social innovation implemented by companies have emerged as Corporate Social Responsibility (CSR), Social Entrepreneurship, Circular Economy, Digital Innovation, Co-creation.

When questioned about who within the company should lead on SI, the focus group members point out that not only the employees but also management should take responsibility.

Companies acknowledge the value of soft skills for SI development, but most of them cannot take action for various reasons.

CHALLENGES COMPANIES MEET WHEN ENGAGING IN SOCIAL INNOVATION

The most frequently mentioned challenges in the focus groups were as follows:

To start with, there is inadequate social understanding and awareness of employees on the ability to solve social problems. This is linked to several factors:

- The absence of social innovation in the company strategy,
- A lack of empowerment of employees by the management,
- A lack of social objectives in the company.



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Inadequate skills among the company's workforce are another stumbling stone. Social innovation projects require people with different skillsets to work together. However, businesses often have limited human resources and do not have qualified employees to support social innovation, translating into a lack of skills for formulating social goals and working to achieve them.

For their employees training, companies tend to attend the immediate technical needs that will allow employees to execute correctly the tasks they are entrusted with. Social innovation is a more abstract concept, and as such does not lead to immediate tangible results. It requires social competences, and a combination of predefined workshops and coaching sessions. Overall time allocated for training is limited, and companies tend **not to have training strategies for SI development.**

Management support and organizational structure: Management support is critical for social innovation processes. However, companies' management structures do not encourage the flexibility and creativity required for social innovation and the active appropriation by employees. Social initiatives are often implemented with a top-down approach, the final decision lies with management. Centralized organizational structures make it difficult to implement social innovation projects quickly and effectively. There is also resistance to social innovation, and in some companies, social innovation is not prioritized.

Lack of communication also hinders the social innovation process and is often linked to the organisational structure. For an effective social innovation process to take place, it is important to receive input from all employees and communicate their ideas effectively.

Companies also have to deal with **financial limitations**, making it difficult for them to engage in SI initiatives.

CONCLUSIONS

After analysing the most recurring challenges hindering the companies' engagement in SI, a series of workforce skills needs, that will contribute to overcoming these challenges, have been determined.

This section presents first the skills needs, and then how the Entrecomp framework with its 15 competences can contribute to define the learning outcomes for SI under EULEP.

a) Workforce Skill Needs

The main challenges for companies to engage in SI were presented in the preceding section. **As regards SI awareness**, different dimensions of SI should be well understood by enterprises. Social innovation is also a tool for accompanying companies in their digital transitions. Implementation of new technologies can have an effect on enterprises' human resources structure, leading potentially to changes in the workforce structure and management. Social innovation can help mitigate the effects of these changes and help employees navigate these changes successfully.

Concerning resistance to change, as technologies transform our world, organizations must readjust their businesses, work functions and overall goals in response to external market drivers. Although people's resistance to change is natural, individuals can adapt successfully when they are supported correctly. It brings us to the "change management" issue in





companies. An employee or manager needs to understand and evaluate “change management” for adopting AI and VR in their business and to be innovative.

Management support and organisational structure and **lack of communication** are often linked with each other. The introduction of AI and/or VR can have a disruptive effect on organisational structures, leading from fixed hierarchical functions and roles to a more agile working environment. Social innovation (or change management) will help navigate the transition process and communication plays an important role in it. All stakeholders will need to acquire new soft skills.

When questioned about the skills needed for engaging in SI, and overcoming the related challenges, the focus group participants mentioned a long list of skills needs. The skills needs are summarised in after-mentioned table by importance, i.e. number of countries that highlight the specific need. The table also features the corresponding competences from the Entrecomp framework.

Skills Needs for SI Development Mentioned by Focus Groups Participants		
Lack of Competency/Skills	Number of Countries	Corresponding Competences in EntreComp Framework
Teamwork	8	Working with others
Awareness on SI	6	Ethical and sustainable thinking
Communication skills	6	Mobilizing others
Digital skills	6	Mobilizing resources
Business development	5	Motivation and perseverance, Financial and economic literacy, Planning and management
Decision Making	5	Taking the initiative, Vision
Recognize Opportunities	4	Spotting opportunities
Resilience Competence	4	Motivation and perseverance, Coping with uncertainty, ambiguity and risk
Resource Mobilization	4	Mobilizing resources
Mentoring	3	Working with others
Networking	3	Working with others
Project management	3	Planning and management
Adaptation to Technology	2	Planning and management, Mobilizing resources
Best-practices on SI	2	Learning through experience
Creative Thinking	2	Creativity
Critical thinking	2	Learning through experience
Knowledge on Innovation	2	Spotting opportunities
Leadership	2	Mobilizing others
Risk Taking	2	Coping with uncertainty, ambiguity and risk
Business Ethics	1	Ethical and sustainable thinking
Employee Rights	1	Self-awareness and efficacy
Generational differences	1	Working with others, Ethical and sustainable thinking





Innovation Agility	1	Motivation and perseverance, Coping with uncertainty, ambiguity and risk
Internal Communication	1	Working with others
Management skills	1	Planning and management
Presentation skills	1	Mobilizing others
Problem solving	1	Creativity
Re-definition of performance indicators	1	Planning and management
Soft skills	1	Mobilizing others
Team Management	1	Working with others
Virtual Reality	1	Mobilizing resources

“Teamwork” emerges as the most frequently expressed need for developing SI in a company. It is followed by “communication skills” and “digital skills”. On the other hand, it is understood that awareness on SI needs to be increased.

b) *Entrecomp Framework*

The Entrepreneurship Competences (EntreComp) Framework of the European Commission identifies the competences that make someone entrepreneurial. Being entrepreneurial enables people to act and transform ideas and opportunities into shared value. Thereby they increase innovation and employment.

The EntreComp framework is split into three main areas and fifteen competences (five in each area).

Ideas & Opportunities	
1. Spotting opportunities	9. Financial & economic literacy
2. Creativity	10. Mobilising others
3. Vision	Into Action
4. Valuing ideas	11. Taking the initiative
5. Ethical & sustainable thinking	12. Planning & management
Resources	13. Coping with ambiguity, uncertainty & risk
6. Self-awareness & self-efficacy	14. Working with others
7. Motivation & perseverance	15. Learning through experience
8. Mobilising resources	

The tool is adaptable and flexible: a learning activity or development tool may address only 1 competence or develop all 15 competencies.

In the frame of EULEP, and in line with the outcome of the focus group work, emphasis is to be placed on some competences more than others.

The skill needs highlighted by the EULEP SI focus groups have been matched with the competences defined in the EntreComp Framework (as shown in the table under a)).





Corresponding EntreComp Competencies



As a result of a consultation process with the project partners, six EntreComp competences are selected to define learning outcomes under EULEP:

1. Working with others
2. Mobilizing resources, mobilizing others
3. Taking initiative
4. Creative Thinking
5. Spotting opportunities
6. Ethical and sustainable thinking





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The present report has been drafted by the lead organisations of Work Package 2 (Terrassa Chamber of Commerce and Industry, TOBB) in collaboration with Eurochambres.

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July 2023

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