



BETES

“Bootcamps for Emerging Technologies and Essential Skills”

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"Shaping the Future Workforce: BETES' Perspective on Skill Importance in Emerging Technologies"

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BETES project and motivation

Bootcamps for Emerging Technologies and Skills (BETES) is an Erasmus+ funded project that aims to train unemployed, underemployed, or other individuals that want to be retrained on various technologies and obtain both soft and hard skills in Cyprus, Greece, and Malta.

BETES project motivation is to address the increase in overall unemployment in Europe, especially following the COVID-19 pandemic. The European Central Bank reports that the crisis led to a decline in the labor force, a fall in employment, and an increase in unemployment, affecting men and women differently over time. There is a significant skills gap in many industries, and a considerable percentage of employees in Europe need reskilling. The demand for skilled and trained employees in emerging technologies is increasing, and organizations need to identify and develop competencies that will be required in the foreseeable future. This presents an opportunity for European organizations to rethink and identify emerging competencies and new technologies, particularly in the ICT, robotics, and data analytics industries, to reskill and train unemployed Europeans to fill vacancies.

A questionnaire was developed within the frame of the project to help the consortium establish a status quo on soft and hard skills and their importance in both academia and industry. The questionnaire complies with the General Data Protection Regulation (GDPR).

BETES consortium

- ECECT- European Centre for Emerging Competencies and Technologies (Cyprus)
 - Co-Ordinator
- SkillsZone Malta (Malta)
- Digital Idea (Greece)



The Importance of Soft and Hard Skills in the Evolving Labor Market

First and foremost, it is important to define what are soft and hard skills. Soft skills are non-technical abilities that enable individuals to work effectively with others and manage various situations in the workplace. Examples include communication, teamwork, problem-solving, adaptability, time management, leadership, and emotional intelligence. On the other hand, hard skills refer to the technical and quantifiable abilities that are acquired through education, training, or experience, and are more specific to a particular job or industry. Examples include proficiency in computer software, knowledge of programming languages, data analysis, project management, or industry-specific technical knowledge. While hard skills are usually required for a specific job, soft skills are often necessary to interact effectively with colleagues, clients, and management. Both soft and hard skills are valuable assets for any professional, and the combination of these skills is often what sets apart successful individuals from others.

The consortium performed some desk research regarding the emerging technologies and skills and the need for training and reskilling, in order to identify the status quo of the labor market, and these are some of the findings:

The “2021-2023 Emerging Technology Roadmap for Midsize Enterprise” developed by Gartner, highlights various technologies that medium-sized enterprises (MSEs) are investing in to improve their operations and keep up with their larger counterparts. MSEs are experimenting with conversational AI, hyper-automation, citizen technologies, hybrid cloud storage and security, edge computing, digital reality, Wi-Fi 6 and 5G, and cloud computing to increase efficiency, productivity, and resilience while reducing risks. They are investing in these technologies despite potential implementation costs and talent unavailability, recognizing the benefits of increased customer and employee satisfaction.

According to the “KPMG global tech report 2022”, most technology leaders are optimistic about the benefits of digital transformation and believe their organizations are effective at using technology to advance their business strategies, and technologies such as cloud adoption “is no longer the mark of a digital leader, merely the logical evolution of IT”. However, finding individuals with both technical and business knowledge to implement digital tools is proving to be a challenge for many organizations, which may slow down their transformation plans.

According to Deloitte, even though hard skills have been viewed as superior, by 2030 soft skills will account for two-thirds of all jobs and will grow 2.5 times the rate of jobs in other fields. The shift towards automation in businesses means that soft skills are becoming increasingly important as they are not easily replicated by machines. This emphasis on soft skills is also supported by successful companies like Google and Amazon, who have found that strong soft skills are essential for effective teamwork and collaboration.

To summarize, the labor market is currently undergoing significant changes due to the increasing adoption of digital technologies. The demand for skilled technologists who possess both technical and business knowledge is rising, as highlighted by the Gartner and KPMG reports. However, Deloitte emphasizes the growing importance of soft skills, which are becoming increasingly crucial in the world of automation. Therefore, both hard and soft skills are necessary for individuals to succeed in the current labor market, and organizations must focus on improving employees' skills in both areas to remain competitive and agile in the face of technological change.

The 2022 Digital Economy and Society Index (DESI) rankings highlight the need for digital progression in all countries within the consortium. While Malta ranks 6th out of 27 EU Member States and has good performance across the different dimensions of the index, there is still room for improvement in closing existing gaps and pioneering advanced digital technologies. On the other hand, Cyprus ranks 20th and Greece ranks 25th, indicating a significant need for improvement in their citizens' digital skills. One out of two Cypriots lacks basic digital skills, emphasizing the urgent need for a change of pace in the country's drive to improve digital skills. While Greece has progressed well in recent years, it still lags in comparison with other EU Member States.

Hence, every country in the consortium must prioritize enhancing its citizens' digital skills by implementing training and reskilling programs to stay competitive in the global economy. Additionally, the partners by collaborating, can overcome the obstacles and accomplish their digital objectives such as achieving a higher ranking and above-average performance in the EU.

Survey Demographics

This survey collected 62 responses from the participants, of which 48.8% are from Cyprus, 29% from Greece, and 22.6% from Malta.

To ensure that the project satisfies the requirements of both academia and industry, the consortium requested information about the educational background, organization type, and industry of the participants. This way the results include input from individuals with a range of experience and educational levels, from those with a Doctorate and extensive experience to those with less experience and lower levels of education. The majority of the participants have completed a master's degree (40.3%) while only 32.3% have a bachelor's degree, and 14.5% hold a Doctorate. Most of the participants worked in education and e-learning (46.5%) and business, financing, and other private sectors (i.e. (41.7%). The third most common industry is engineering, and technology (24.2%) followed by research (21%) and environment/maritime and energy (9.7%). In terms of the type of organization/institute that respondents worked for, the majority (61.3%) were employed in micro small, medium, or large enterprises, while 24.2% were affiliated with schools or universities, and the other 14.4% worked in private and public organizations.

To ensure diversity among the responses, participants were also asked to provide their ages and gender. Most respondents fell between the ages of 25-45 (51.6%), with 33.9% being 45 years or older, and 14.5% belonging to the 18-25 age group. Gender distribution was nearly equal, with 51.6% identifying as male and 48.4% as female.

Survey Diagnostic Questions

1. What soft skills do you think are important in your industry?

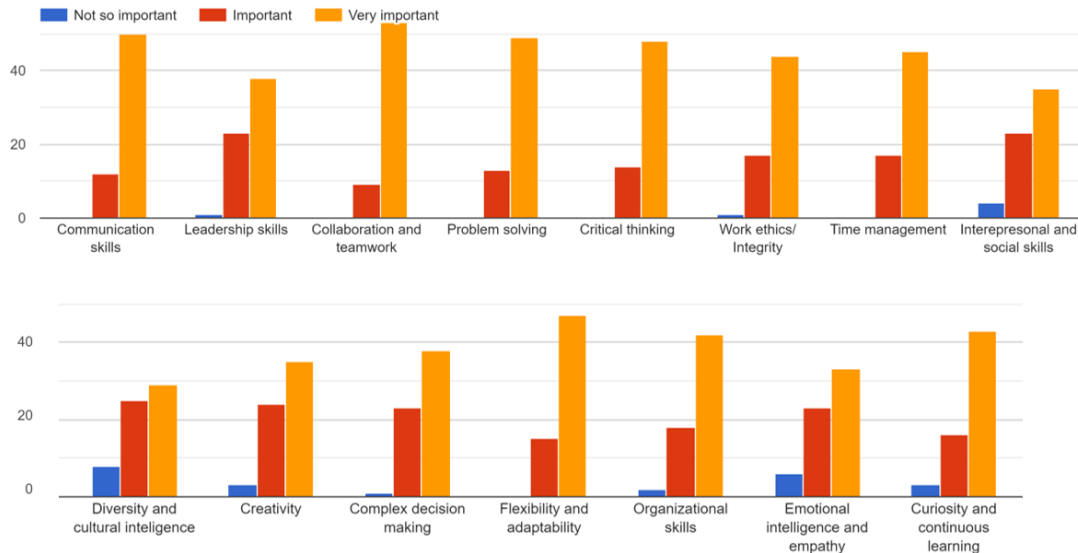


Figure 1: The importance of soft skills in various industries

It is evident from *Figure 1* above that the majority of the participants recognize the importance of soft skills in the workplace.

Specifically, the soft skills that were identified as the most crucial are collaboration and teamwork, communication, problem-solving, critical thinking, flexibility, and adaptability. Of the 62 participants surveyed, 53 (equivalent to 85.4%), 50 (80.6%), 49 (79.0%), 48 (77.4%), and 47 (75.8%) of them responded as “VERY IMPORTANT” for each skill respectively. On the other hand, creativity, emotional intelligence and empathy, and interpersonal and social skills received lower rankings, with 35 (56.4%) and 33 (53.2%) participants responding, “VERY IMPORTANT”.

Overall, the data suggests that while all soft skills are deemed important, some are more critical than others (and some not important at all), depending on the nature of the work and the industry in question.

OBJECTIVE: to collect insights from individuals working in a specific field about the soft skills they consider essential for success in their line of work. This information is then analyzed to identify any commonalities across different industries (academia and industry) and to create educational material that covers these essential soft skills. The aim is to provide professional development and training opportunities for the individuals, which can help them improve their soft skills and work more effectively. Ultimately, this can lead to more successful and productive workers and teams across different industries.

2. How important are soft skills in your industry?

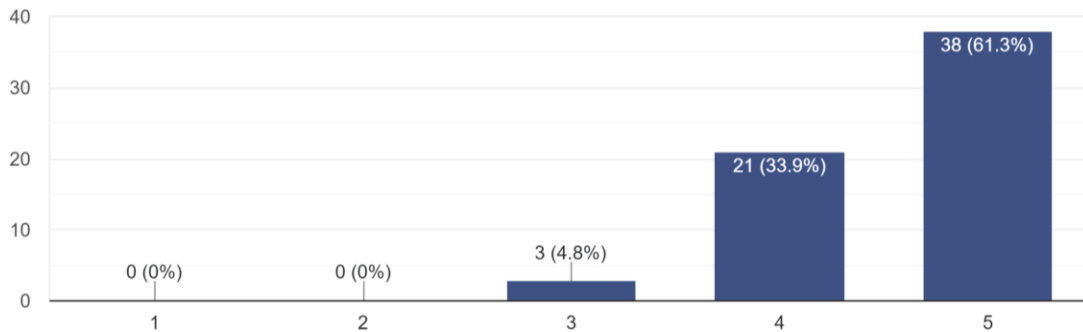


Figure 2: Level of importance of soft skills in various industries

The participants on a rate of 1-5 (1:NOT IMPORTANT, 2:SOMEWHAT IMPORTANT, 3:MODERATELY IMPORTANT, 4:IMPORTANT and 5: VERY IMPORTANT) in terms of the importance of the soft skills in their industry the majority (61.3%) responded 5 (VERY IMPORTANT), 33.9% participants responded 4 (IMPORTANT) and the rest 4.8% responded 3 (MODERATELY IMPORTANT).

Similarly, to the previous question, the data suggests that soft skills, in general, are deemed relatively important, in all industries and some are more critical than others.

OBJECTIVE: *to understand the level of importance soft skills hold in a particular industry or workplace. Similarly, to Q1. this information can be used to tailor the development of educational material and training on soft skills.*

3. What hard skills are important in your industry?

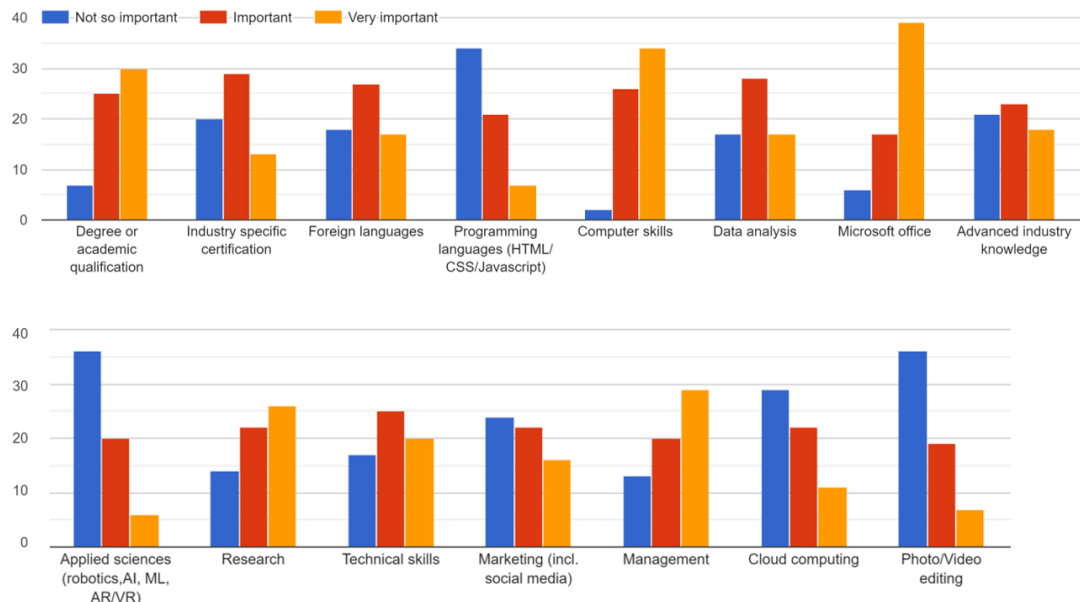


Figure 3: The importance of hard skills in various industries

Compared to soft skills, the importance of specific hard skills elicited more diverse responses, which was anticipated, given that hard skills vary depending on the industry in question.

Individuals were asked to rate the importance of various hard skills (NOT IMPORTANT, IMPORTANT, VERY IMPORTANT). As can be seen in *Figure 3*, Microsoft Office emerged as the most critical hard skill, with 39 participants (62.9%) indicating that it is "very important", followed closely by computer skills with 34 (54.8%) and degree or academic qualification with 30 (48.3%). If you take into consideration both the "very important" and "important" responses, the highest ranking is as follows:

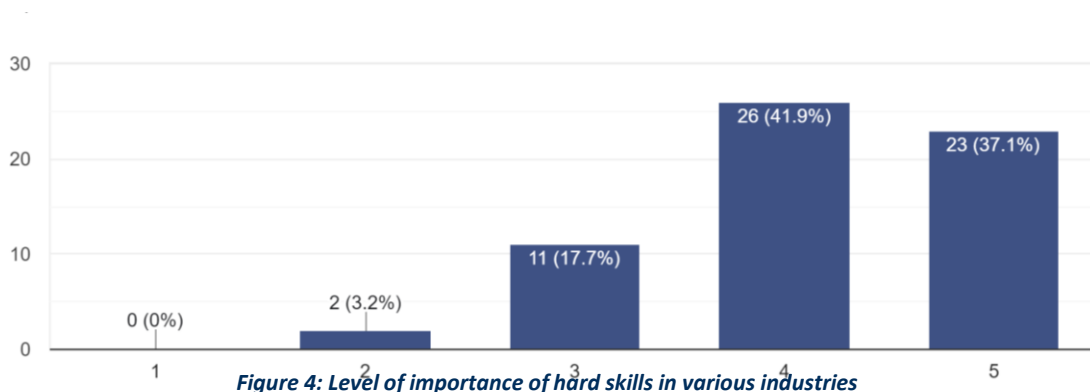
The most important hard skill in the workplace is considered computer skills, with 60 out of 62 participants (96.77%) followed by Microsoft Office skills with 56 (90.32%). In addition, degree or academic qualifications were also deemed very important or important by most participants, with 55 responders (88.71%) indicating their significance. While management and research equally got 48(77.4%) and data analysis and technical skills come after with 45 (72.6%) responses rating them very important or important.

Meanwhile, it is evident that the least important skills according to the participants are photo/video editing and applied sciences with 36 (58.1%) marking them as "not important", followed by programming with 34 (54.8%) and cloud computing with 29 (46.8%).

The data suggests that having a range of hard skills is important in the workplace, with computer skills, Microsoft Office skills, and academic qualifications being the most crucial. Other important skills include research, data analysis, and technical skills, while the least important ones are photo and video editing, applied sciences, and programming languages. The importance of hard skills varies depending on the industry and job position, and the perception of unimportance may also vary.

OBJECTIVE: to gain insights into the specific hard skills that are valued by employees or industry professionals in that field. The information is then analyzed to identify any commonalities across different industries (academia and industry) and to create educational material that covers these essential hard skills. The aim is to provide professional development and training opportunities for the individuals and help them improve their hard skills and allow them the opportunity to ensure employment in roles that require skilled technologists and experts, as well as business knowledge.

4. How important are hard skills in your industry?



The participants were asked to rate the importance of hard skills in general from 1-5 (1: NOT IMPORTANT, 2: SOMEWHAT IMPORTANT, 3: MODERATELY IMPORTANT, 4: IMPORTANT and 5: VERY IMPORTANT). The majority (61.3%) responded 4 (IMPORTANT), 37.1% participants responded 5 (VERY IMPORTANT), 17.7% responded 3 (MODERATELY IMPORTANT) and the rest 3.2% responded 2 (SOMEWHAT IMPORTANT).

Similarly, to the previous question, the data suggests that hard skills, in general, are relatively important, in most if not all industries, however depending on the nature of the industry some may be completely unimportant.

OBJECTIVE: to understand the level of importance of hard skills hold in a particular industry or workplace. Similarly, to Q3. this information can be used to tailor the development of educational material and training on hard skills.

5. Which skill set do you believe is more important in your industry?

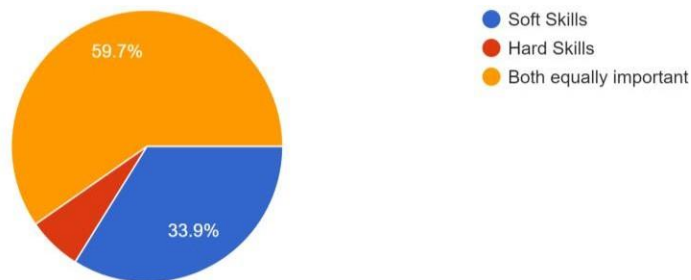


Figure 5: Level of importance of both soft and hard skills

From the pie chart in *Figure 5*, it is clear that most of the participants (59.7%) believe that both soft and hard skills are as important in academia and industry. The rest of the 33.9% and 6.5% believe that soft skills and hard skills are more important respectively. The reason for that is probably based on the background of each participant, however, soft skills generally are considered more important in most industries as they are skills that cannot be mimicked even by the most advanced technologies.

OBJECTIVE: to identify whether soft skills or hard skills are more important or if they are considered as important. This will help focus on material development and training the most important skills.

6. Why do you think that?

To summarize the 35 responses to this open question (continuation of the previous questions), many people believe that hard and soft skills are important, with the quality of service being negatively affected if either is missing. There are some industries, such as finance and shipping, where hard and soft skills are considered essential. However, some industries, such as legal or business work, may place a greater emphasis on soft skills. In the digital marketing industry, soft skills such as communication and collaboration are seen as important, as well as hard skills like search engine optimization (SEO) and data analysis.

In conclusion, both hard and soft skills are important, and the most effective workers have a good grasp of both.

OBJECTIVE: an open question to allow the participants to elaborate on their previous responses and make some further comments, allowing the consortium to get more detailed and industry-specific answers.

7. Which of the below-emerging technologies do you think is the next 'big thing'? Please select up to 3-5:

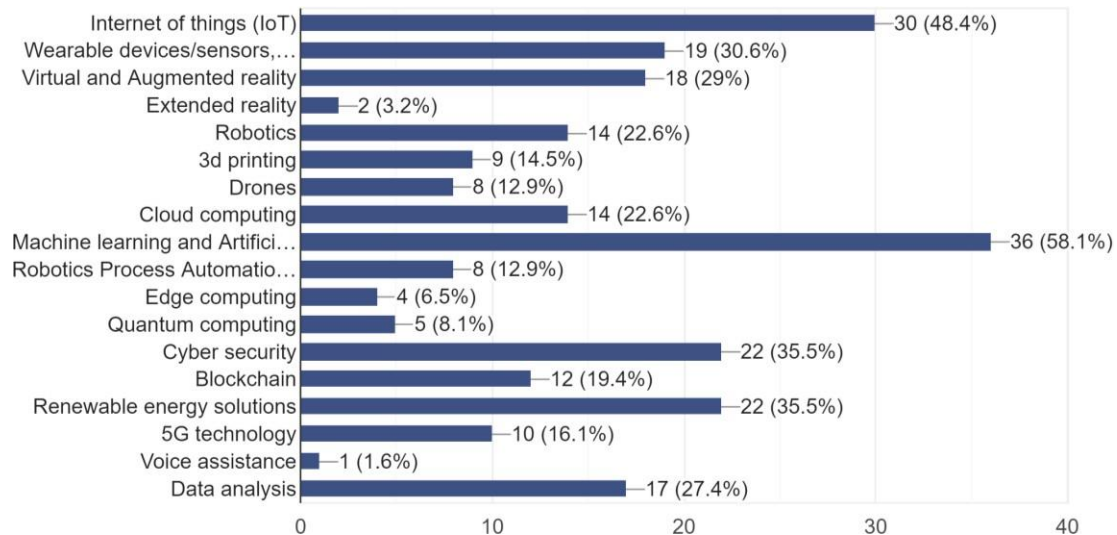


Figure 6: The emerging technologies that are believed to be the next 'big thing'

Based on the responses of the 62 participants, the next "big thing" in emerging technologies and skills is quite obvious. Over half of the participants believe that Machine Learning and Artificial Intelligence are the next "big thing", with a total of 36 responses (58.1%) and The Internet of Things (IoT) comes in at a close second, with 30 responses (48.4%) of the participants. Followed by Cybersecurity and renewable energy solutions had 22 responses (35.5%) of participants, Virtual and Augmented Reality with 18 responses (29%), Wearable Devices/Sensors and haptics, as well as Data Analysis, came in at 19 (30.6%) and 17 (27.4%) responses respectively. It seems that the least popular emerging technologies were Edge computing, Extended Reality, and Voice assistant with only 6.5%, 3.2%, and 1.6% respectively.

It is important to note that these results should be interpreted with caution, as some technologies may have received lower rankings because many participants are not in the engineering or technology industries. As a result, they may not be aware of the significance or rapid advancement of certain technologies both currently and in the near future.

OBJECTIVE: in addition to Q3. "What hard skills are important in your industry?" this question aims to give a better insight regarding the hard skills and emerging technologies and the need to skill or reskill professionals and other individuals in those. The participants may have responded to some hard skills as not so important, however, they could be the most emerging technologies and skills, therefore could still be included in the developed educational material and training.

Conclusion

Based on the findings, we can conclude that both soft and hard skills are important, but some skills are more critical than others depending on the industry and the job position, and over half of the participants believe that they are equally important.

For the soft skills, it was identified that the most crucial skills are collaboration and teamwork, communication, problem-solving, critical thinking, flexibility, and adaptability, with over 75% of participants rating them as "VERY IMPORTANT." However, creativity, emotional intelligence and empathy, and interpersonal and social skills received lower rankings, with around 50% of participants rating them as "VERY IMPORTANT."

In terms of hard skills, it was found that there is a higher versatility in the responses, with computer skills, Microsoft Office skills, and academic qualifications being the most crucial, followed by research, data analysis, and technical skills. While the least important ones are photo and video editing, applied sciences, and programming languages.

Over 50% of the participants believe that the next "big thing" is Machine Learning and Artificial Intelligence, followed by the Internet of Things and Cybersecurity. While less likely to be the next "big thing" were Edge computing, Extended Reality, and Voice assistant.

It was observed that even though some hard skills were deemed as not so important compared to the others, they were considered to be the next "big thing", for example, applied sciences – Artificial intelligence, Machine learning, Robotics, etc.

Certainly, the results regarding the hard skills and technologies must be taken with caution as most participants have a non-technical, non-engineering background, therefore are potentially not aware of the significance of certain technologies and skills and also varies according to the industry.

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