# Go4NewTech

## LIFELONG LEARNING IN THE ENTERPRISE SECTOR – MODERN TECHNOLOGIES

WROCŁAW 2022

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# ABOUT THE PROJECT

**PROJECT TITLE:** *Go4NewTech*

**PROJECT NO.:** POWR.04.03.00-00-0121/18

**THE LEADER:** Dobre Kadry. Centrum badawczo-szkoleniowe Sp. z o.o. (Wrocław, Polska)

**THE PARTNER:** South-Eastern Finland University of Applied Sciences (Xamk) (Small Business Center Mikkeli, Kouvola, Finlandia)

**PROJECT IMPLEMENTATION TIME:** 11.2019–12.2022

**SOURCE OF FUNDING:** The European Social Fund

The main aim of the project is to develop, together with the Finnish partner, and put into practice a solution to effectively improve the competencies of SME employees by learning to use the latest ICT technologies.

The target groups of the project include employees of companies providing services in the SME sector and also service departments of manufacturing companies, as well as employers in the SME sector and training institutions. Particular attention was paid to developing solutions to meet the needs of so-called mature employees (aged 45–65).

# 1. THE Go4NewTech MODEL VS. LIFELONG LEARNING

/ The aim of the *Go4NewTech* model solution developed as part of the Polish-Finnish partnership is, above all, to effectively encourage employees and employers in the Polish SME sector to improve their IT skills, with a particular focus on mature people (conventionally defined as 45-65-year-olds). Participation in interesting short forms of training is expected to provide knowledge and practical skills that will meet participants' specific needs, which, in turn, is expected to contribute to better preparation of Polish enterprises for the implementation of modern IT solutions. As part of the project, we have planned the preparation and test implementation of eight-hour, one-day training courses on selected topics showing the practical use of modern technologies in SMEs, developed using modern adult education methodology.

## ABOUT THE FINNISH PARTNER AND THE PROJECT TARGET GROUP

/ Finland has for years been associated with an excellent education system for children, adolescents and adults. The solutions developed to effectively motivate people of different ages to develop throughout their lives and be active in various forms of educational support still remain an unrivalled example for most EU countries- so do innovative and active teaching methods. Hence, we were delighted to have the opportunity to cooperate with a very experienced Finnish Partner: South-Eastern Finland University of Applied Sciences (Xamk), based in Mikkeli and Kouvola. The Finnish partner helped us, among others, to develop research tools for the primary research planned within the project, and supported us in the preparation of a manual for trainers and practical training courses to introduce the use of simulation pedagogy in the field of modern ICT technologies.

/ We have intentionally focused on the SME sector, IT skills and mature people. For years, there has been talk about insufficient competencies of employees working in Polish enterprises in relation to technological change and, consequently, serious constraints imposed on the development of Polish enterprises. At the stage of preparing the project application (the end of 2018), we carried out a preliminary diagnosis of the reasons for such inadequacies, where we indicated, among others, poor or even complete lack of knowledge about IT solutions that could be used and, consequently, fear of using such innovations. We have given some examples showing that concepts such as the Internet of things, big data analysis

tools, cyber-physical systems, cloud communication and remote activities are incomprehensible and inaccessible for the employees of most Polish SMEs, and that changes related to modern technologies create a real barrier to development. In the preliminary diagnosis, we also pointed to the stereotypes connected with poorer capabilities and IT skills of experienced enterprise employees, and their lower activity in participating in activities that would allow them to catch up. We also paid attention to barriers in the area of appropriate infrastructure, especially a stable and high-speed Internet connection allowing the use of most solutions in the so-called cloud and remote mode, as well as inappropriate teaching methods, which are not very interesting and do not promise high effectiveness in the acquisition of new knowledge and skills.

/    In our view, these factors cause SME employees, especially those aged 45+ and with a lot of experience, to have difficulty finding their way around technological change and to be perceived as less capable employees. Most of these factors apply especially to employees of service companies and service departments of manufacturing companies (e.g. marketing, sales, accounting), mainly due to the frequent need to deal with very diverse issues and gaps in IT education/training. Due to the wide variety of companies in the SME sector and the willingness to develop a flexible solution, we have dedicated our model specially to employees of departments or service companies.

## PROJECT IMPLEMENTATION

/    The project started at the end of 2019 and we had to carry out most of the initially planned activities in a situation previously known only from theoretical considerations and science fiction books or films. The period of the Covid-19 pandemic dramatically changed the project assumptions, both in the development of solutions and in the testing of their use.

/    The implementation of the project objective required the identification of competency gaps and training needs in the area of the use of the latest ICT technologies and the conduct of extensive research. We started with desk research carried out mainly on the basis of the available literature dedicated to the issues of Industry 4.0 in Polish enterprises of the SME sector. Next, we conducted qualitative primary research in the form of individual in-depth interviews with experts in the field of modern technologies, Industry 4.0 and with employers from the SME sector. Unfortunately, due to the Covid-19 pandemic we had to give up the CATI research planned in a representative sample of 1,000 SME employers, as no professional opinion polling company decided to carry out such an assignment in spring 2020. Ultimately, we carried out this study in May-June 2020 in the form of a CAWI/CATI survey on two representative samples: SME employees aged 45+ (N = 500 participants) and SME employers (N = 700 entities). In addition, owing to funding obtained as part of a research grant in 2021, we managed to carry out Polish-Finnish research in the group of SME employers on the importance of various types of competencies.

/    The results of the research allowed us to develop 'tailor-made' IT training courses for SME employees that have been prepared in the form of a case study using elements of simulation pedagogy. We have been testing these training courses free of charge in a group of employers and employees in the SME sector from the beginning of 2021 until October 2022. Unfortunately, due to circumstances it is often done remotely via Zoom. So far, the reflections from the testing phase are not optimistic. There is very little interest in remote training among mature employees. Moreover, potential participants are not able to endure eight lessons of remote computer work in a row learning modern IT solutions. We tried to solve the problem by dividing the IT case study into two meetings of four lessons each, but it was only partially successful. Unfortunately, we can see that the participants are weary or even discouraged due

to the Covid-19 pandemic and the fact they have to work remotely, and they are also concerned about the current geopolitical situation. Our attempts to use various channels to inform people about the project and training showed virtually no effectiveness of social media advertising. Interestingly, during numerous direct interviews with employers or employees in the SME sector, the need to improve IT skills is apparent, but at the same time there is a low level of interest in participating in training due to the "common lack of time". Our current experience shows greater effectiveness in reaching employees through contact and recommendations from employers rather than promoting the undertaking of learning activities by employees on their own initiative.

## CONTENT OF THE STUDY

**/**    This study is a part of the *Go4NewTech* model solution, which is expected to contribute to the improvement of IT skills of employees and employers of the SME sector in Poland. In the following sections of the paper, we present an analysis of generally available statistical data in the field of adult education, the most important results of research on training needs and broadly understood competencies of SME sector employees, a comparison of the lifelong learning systems in Poland and Finland, the characteristics of simulation pedagogy as an effective method of adult education and, finally, a description of the developed solution and its possibilities for testing and implementation.

*We wish you a pleasant reading!*

# 2. ANALYSIS OF SELECTED STATISTICAL DATA ON LIFELONG LEARNING IN EU COUNTRIES

/ Most publicly available international data in the area of lifelong learning can be obtained from the Eurostat database. The most extensive data come from the periodically conducted EU Labour Force Survey (EU-LFS). Data on participation in adult education and training in 2021 is shown in Figure 2.1. The rate measures the percentage of people aged 25-64 who declared that they had received formal or non-formal education and training in the four weeks preceding the survey. Adult education includes general and vocational as well as formal and non-formal learning activities. The available data is presented by different colour saturation from pale beige showing the countries with the lowest participation rate to dark red showing the countries with the highest participation rate in lifelong learning. Poland was in the second group from the bottom (participation between 5.1-8.5%), whereas Finland – in the group with the highest rate (22.4-34.7%), together with Sweden, Denmark, Switzerland, Iceland and the Netherlands.
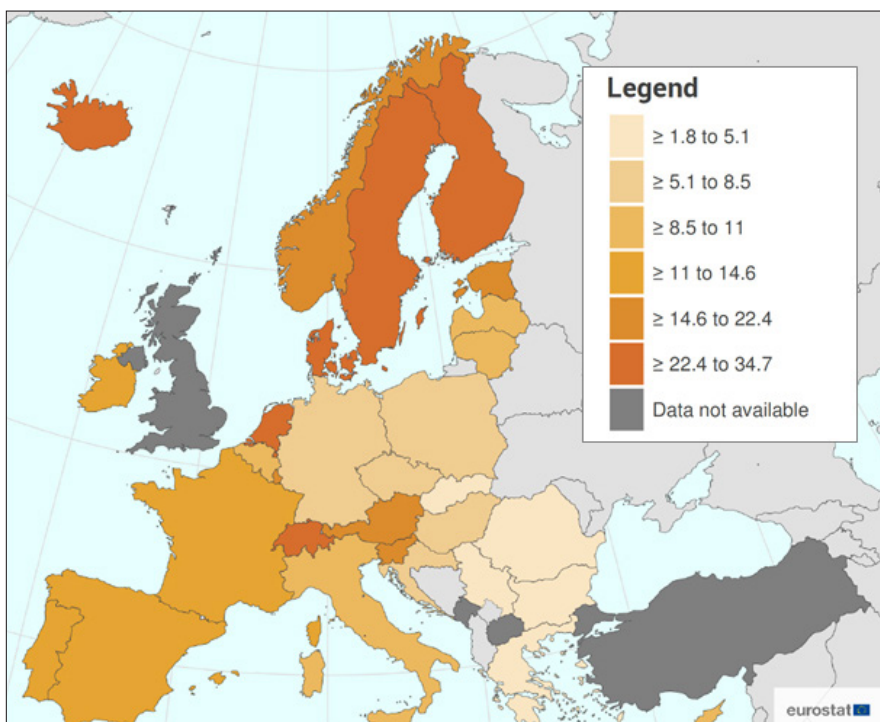
Figure 2.1
Participation in adult education and training in 2021 in selected European countries

Source:
EU Labour Force Survey (EU-LFS).

**/** A comparison of data over a longer period of time also looks unfavourable for Poland. Figure 2.2 shows the changes from 2004 to 2021 in data on participation in adult lifelong learning on average for the EU countries, Poland and Finland. It is worth emphasising that, disregarding the 2020 collapse observed in all countries, the EU average over this period increased from 7.1% in 2004 to 10.8% in 2021, and in Finland from 22.8% to 30.5%, respectively. In Poland, we saw a rather symbolic positive change, from 5.0% in 2004 to 5.4% in 2021.
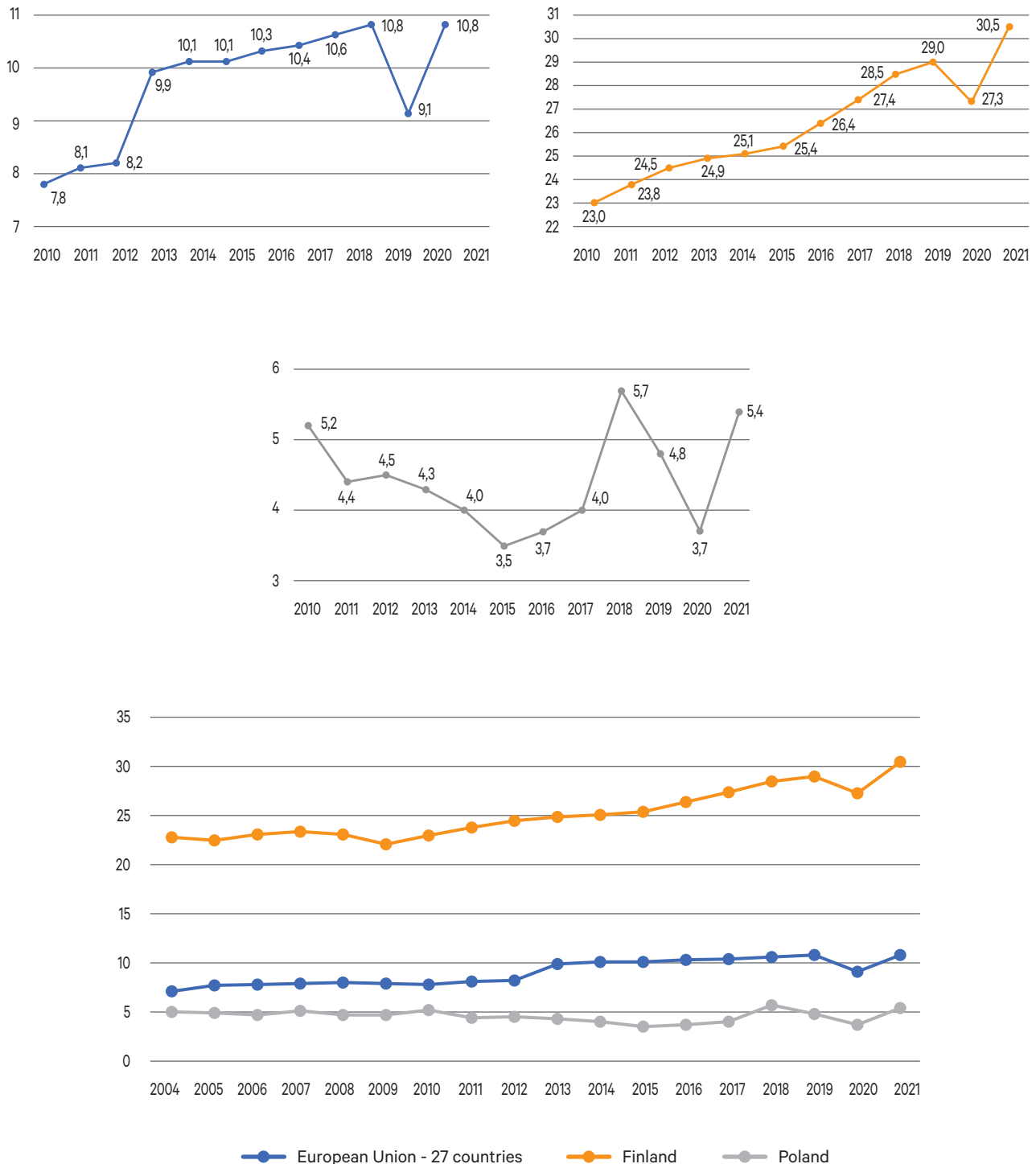


Fig. 2.2    Participation in adult education and training in 2004–2021 in selected EU countries
Source:    own study based on the EU Labour Force Survey (EU-LFS).

/    The analysis of the situation in Poland in the area of lifelong learning of adults shows the persistently low level of participation of adults in lifelong learning over the years. The lack of change in the percentage of people participating in education in the period since 2004 is worrying, despite the extensive promotion of lifelong learning, multi-billion EU subsidies for soft projects and support directed to people experiencing a difficult situation on the labour market. The activities undertaken over the last fifteen years have proved ineffective – we still fall behind the European Union in this area (cf. Fig. 2.3).
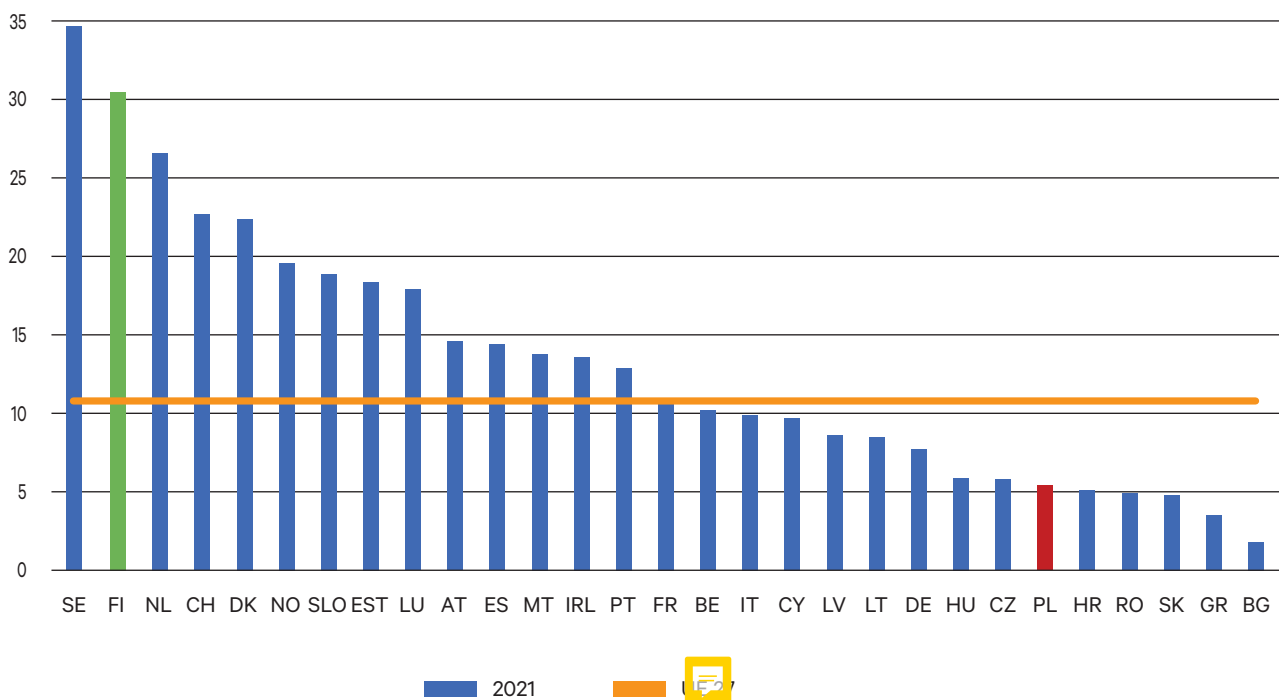


Fig. 2.3    Percentage of people aged 25-64 participating in education in the last 4 weeks in 2021.
Source:    own study based on Eurostat data.

/    What are the reasons for this? It is possible to indicate a few. First of all, convincing those who are already convinced. It is necessary to point out that training activity is mainly visible in selected target groups, that is, mainly highly qualified people, residents of large cities, with higher education, and mostly women. In contract, those who really should take part in educational activities – people aged 45+ or people with low qualifications – do not do that, and all the attempts to convince them are in vain. Unfortunately, lifelong learning patterns still do not function in the public space – when asked people usually declare the need for further education, but in reality they rarely undertake any educational activities. It is particularly visible among employers, who seem to think that training is a short-term cost rather than a long-term investment, especially in such difficult times as we are currently facing.

/    The poor situation in the enterprise sector is also shown by international comparative data on business training activity in the area of ICT (cf. Figure 2.4) although the analysis of changes over time shows significant progress in this respect (cf. Figure 2.5). In terms of the activity of enterprises in ICT training in 2020 (the most recent data available) we are in group 3 in the range of 16%-21%. Finland, like the other Nordic countries, achieved the highest rates (a group 28%-38%).
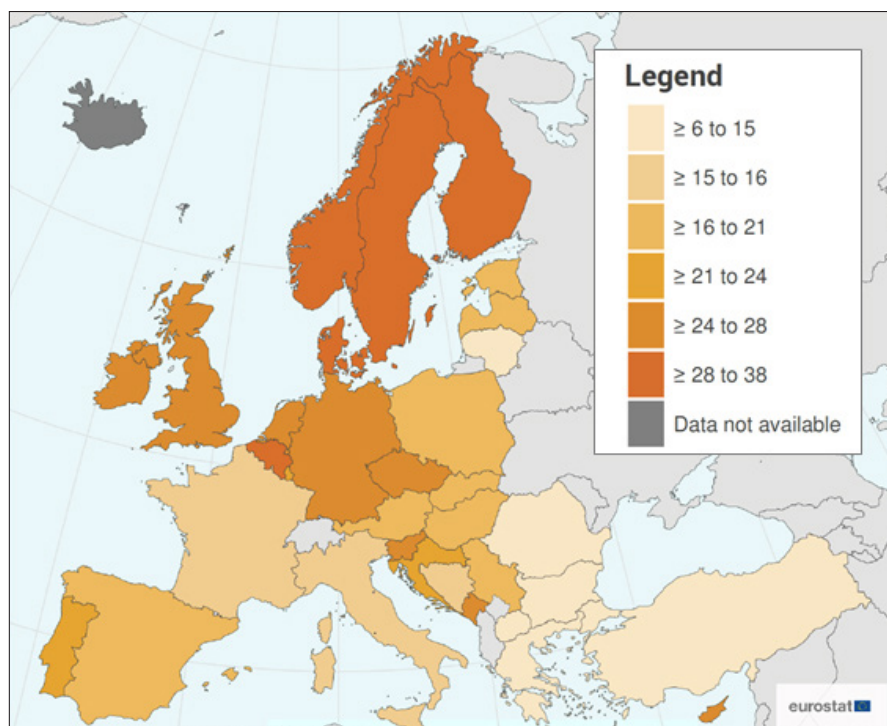
Figure 2.4
The percentage of enterprises that provided training to develop/improve their employees' ICT skills in 2020.
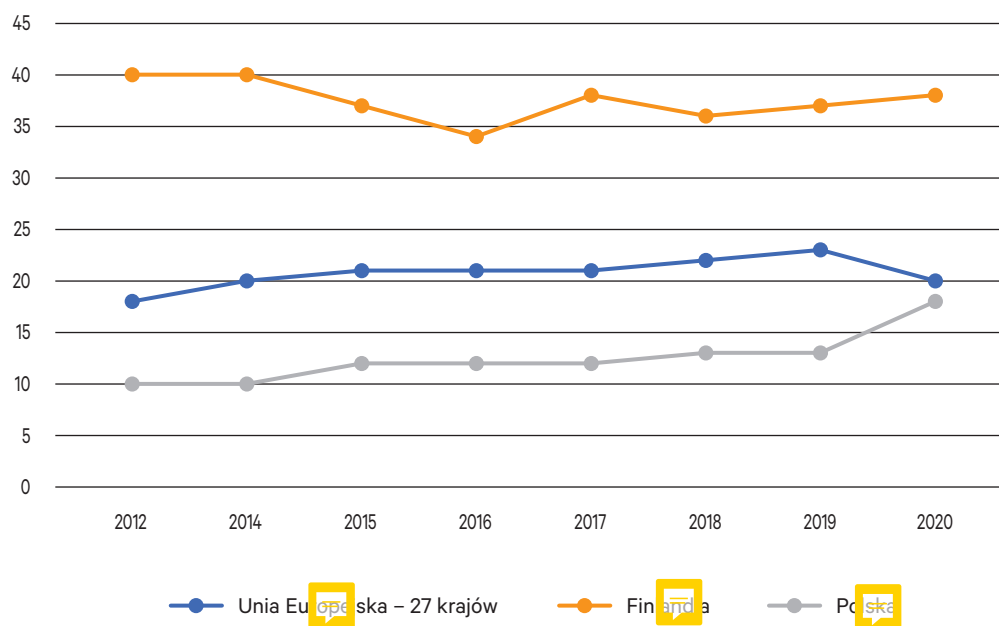
Source:
EU Labour Force Survey (EU-LFS).



Fig. 2.5    Change in ICT training activity of enterprises in 2012-2020
Source:    own study based on the EU Labour Force Survey (EU-LFS).

# 3. POLAND AND FINLAND – TWO APPROACHES TO LIFELONG COMPETENCY DEVELOPMENT

/ Currently, improving competencies and developing skills through lifelong learning are key factors for economic success, individual well-being and social cohesion[1]. According to experts, the fourth industrial revolution and demographic changes mean that meeting the demands of the labour market requires short-term retraining of employees[2]. This conviction has a direct impact on the quality and continuous improvement of the lifelong learning system in Finland[3]. It is one of the countries that stands out for the effectiveness of its solutions in this area not only in Europe, but also among OECD countries[4], which is reflected in the number of adults improving their knowledge and skills[5]. In Poland, on the other hand, lifelong learning is distinguished by the low percentage of participants of various forms of adult education and training[6]. Therefore, it is necessary to introduce changes that will make it easier for Polish employees to adapt quickly to the changing conditions of the labour market and to increase the level of motivation for continuous educational effort. In this context, the question arises whether Poland could benefit from the solutions applied in Finland. Could they, after appropriate modifications, be transferred to Poland? What determines the quality and effectiveness of the Finnish lifelong learning system, which is recognised as one of the best in the world? In order to answer these questions we have to compare the lifelong learning systems from the two countries.

1   World Economic Forum, *Reskilling Revolution*, https://www.reskillingrevolution2030.org/reskillingrevolution/insights/index.html, [access: 18.05.2022]

2   World Economic Forum, *Workforce and Employment Reskilling*, https://intelligence.weforum.org/topics/a1Gb0000000LJQ4EAO/key-issues/a1Gb0000001hNYPEA2, [access: 18.05.2022]

3   SITRA, *Sitra's seven recommendations for lifelong learning in Finland*, Helsinki 2022, https://www.sitra.fi/en/publications/sitras-seven-recommendations-for-lifelong-learning-in-finland/, [access: 15.05.2022]

4   OECD, *Continuous Learning in Working Life in Finland*, https://www.oecd.org/els/continuous-learning-in-working-life-in-finland-2ffcffe6-en.htm, [access: 15.05.2022]

5   For more on this, see section 2 of this paper.

6   For example, in 2020, the percentage of adult Poles aged 24-64 participating in lifelong learning was only 3.7%. See: EURYDICE, *Polska. Kształcenie i szkolenia dorosłych*, https://eacea.ec.europa.eu/national-policies/eurydice/content/adult-education-and-training-56_pl, [access: 16.05.2022]

## POLAND VS FINLAND
## – CHARACTERISTICS OF THE LIFELONG
## LEARNING SYSTEM

/   In Poland,[7] lifelong learning is understood as education for adults taking place in adult schools, vocational upper secondary schools and post-secondary schools, as well as education in out-of-school settings for adults who have fulfilled their compulsory schooling. However, despite the fact that adults have various opportunities to improve their qualifications, Poland belongs to the group of European countries with a persistently low level of adult participation in lifelong learning, which does not improve despite various activities carried out in this area[8]. Interestingly, those who are usually willing to benefit from different forms of lifelong learning are well-educated people, while those with poorer education, who should particularly focus on improving their knowledge and skills, show the least commitment to acquiring and enhancing the skills necessary on the labour market[9]. There are no appropriate motivation systems or systems allowing of verification and recognition of skills acquired in non-formal and informal ways. In consequence, many people are unaware of the benefits of possessing up-to-date knowledge and skills that are sought-after on the labour market. Employers have little influence on the curricula delivered in schools for adults, and there is hardly any cooperation between teachers/trainers, employers and decision-making bodies that influence the form and funding of continuing education.

/   With a long history of adult learning, Finland prides itself on a great deal of experience in this area and a very well-developed system of lifelong learning. It is noteworthy that adults have a wide choice of opportunities to improve their skills. The effectiveness of education is certainly enhanced by the fact that the superior principle is one of equal and universal access to all forms of education. All age groups learn together, and there is no distinction between forms available only to adolescent or adult participants. Further training, like education at other stages, is based on individual development plans. Therefore, it is important not only to take an individual approach to each employee, constantly monitor their skills and identify existing deficits, but also to set and pursue individual professional development goals. This has a strong impact on motivation and attitude of employees – they have a positive approach towards lifelong learning and value comprehensive education because they are convinced that once acquired, competences are not enough for a lifetime[10]. Vocational qualifications, including specialist ones, can be completed through formal and non-formal education based on diplomas and certificates, but also on the basis of verification and recognition of skills in the workplace. The description of qualifications and the requirements for their acquisition are developed through cooperation between employers, employees and teachers/trainers. The qualification acquisition process is adapted to the needs of learners[11]. The main characteristics of the lifelong learning system in Poland and Finland are shown in Table 3.1.

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7   See the Act of 18 May 2018 on Educational Law, consolidated text, item 1082, article 4(30),
    https://isap.sejm.gov.pl/isap.nsf/DocDetails.xsp?id=WDU20170000059, [access: 21.05.2022]
8   For more on this subject, see Chapter 2 of this study.
9   Instytut Rynku Pracy, *Vademecum Kształcenia Ustawicznego*,
    http://www.irp-fundacja.pl/edukacja/vademecum.php, [access: 21.05.2022]
10  SITRA *The Future will be different. Annual report and financial statement 2019*, Helsinki 2020, p. 25-26,
    https://www.sitra.fi/app/uploads/2020/05/sitra-annual-report-2019.pdf, [access: 18.05.2022]
11  EPALE, *Edukacja dorosłych w Europie: Finlandia*,
    https://epale.ec.europa.eu/pl/blog/edukacja-doroslych-w-europie-finlandia, [access: 18.05.2022]

**TABLE 3.1    POLAND VS FINLAND – SELECTED CHARACTERISTICS
OF THE LIFELONG LEARNING SYSTEM.**

| POLAND | FINLAND |
|---|---|
| • lack of general public awareness that continuous improvement of skills and competencies is essential for the development of societies<br><br>• employees do not always understand the need to upgrade and update their competencies in a constantly changing reality<br><br>• low percentage of people participating in lifelong learning<br><br>• lack of motivation and incentive systems for employees willing to undertake educational efforts<br><br>• lack of effective motivation and incentive systems for employers<br><br>• insufficient and hardly personalised approach to employees and planning their individual development in the workplace<br><br>• lack of cooperation between representatives of institutions and bodies involved in the implementation of lifelong learning (e.g. representatives of government, employers, employees and institutions implementing lifelong learning) | • general public awareness, the belief that Finland's prosperity and the competitiveness of its economy are based on expertise which everyone should have and develop throughout their lives<br><br>• a positive attitude among employees towards lifelong learning and comprehensive education<br><br>• a long tradition and extensive experience of adult learning in this area<br><br>• the principle of equal and universal access to learning, with most education and training activities available to participants free of charge<br><br>• individual career development plans (individual learning objectives, focus on bridging skill gaps of specific employees, qualification process tailored to learners' needs)<br><br>• a broad perspective and comprehensive approach to decision-making (the Council for Employment, Education and Economic Affairs, whose members include the representatives of the Ministry of Education and Culture, the Ministry of Economy and Employment, the Ministry of Home Affairs, the Ministry of Social Affairs and Health, the Ministry of Finance and the social partners)<br><br>• adult education is provided with the help of distance learning methods, owing to which it is possible to modify the curricula and adapt them to the needs of learners[12] |

Source:   own study

12 *Ibidem*
13 OECD, *Continuous Learning…*, op. cit.
14 Liberal adult education aims to promote the comprehensive development and well-being of people and, among others, to make sustainable development a reality, and emphasises the development of self-motivation, a sense of community and inclusion. See: Ministry of Education and Culture, *Liberal Adult Education*, https://okm.fi/en/liberal-adult-education, [access: 20.05.2022]

# POLAND VS FINLAND
# – STRUCTURE OF THE LIFELONG LEARNING SYSTEM

**/**    In both Poland and Finland, employees have a wide range of opportunities to improve their competencies in both formal and non-formal areas, such as comprehensive and vocational education and training, secondary and higher education and training provided by various institutions and employers.

**/**    Lifelong learning in Poland is provided in schools as well as out-of-school settings. In the Finnish system, adults and adolescents learn together in the same place. Most of such institutions are state, whereas independent and private ones do not play a significant role[13], mainly because adult education is usually free of charge or relatively inexpensive. The most important adult education institutions in Poland and Finland, including those which provide education to employees, are shown in Table 3.2.

**TABLE 3.2   POLAND VS FINLAND
                – INSTITUTIONS PROVIDING LIFELONG EDUCATION**

| POLAND | FINLAND |
|---|---|
| • completing primary and secondary education: state and private primary and secondary schools for adults, post-secondary schools<br><br>• vocational education: vocational training centres, lifelong and practical training centres, training institutions<br><br>• higher education: state and private higher education institutions and universities<br><br>• training, courses and coaching for employees: labour market institutions, universities, education centres and lifelong learning institutions | • completing primary and secondary education: secondary schools for adults, general secondary schools, vocational schools, folk high schools, adult education centres<br><br>• vocational education: vocational training institutions; training and courses for the labour market also: universities, adult education centres, folk high schools, private training institutions<br><br>• higher education: universities and universities of applied sciences<br><br>• liberal adult education[14]: adult education centres, folk high schools, summer universities, educational centres and vocational training institutions<br><br>• training, courses and coaching for employees: vocational schools, universities, adult education centres, folk high schools, summer universities, educational centres and vocational training institutions |

Source:  own study based on EURYDICE, *Polska. Instytucje kształcenia dorosłych*, https://eacea.ec.europa.eu/national-policies/eurydice/content/main-providers-53_pl, [access: 20.05.2022] and OECD, *Continuous Learning in Working Life in Finland*, https://www.oecd.org/els/continuous-learning-in-working-life-in-finland-2ffcffe6-en.htm, [access: 15.05.2022]

## POLAND VS FINLAND
## – MANAGEMENT OF THE LIFELONG LEARNING SYSTEM

/    In Poland, the central institution managing lifelong learning at the national level is the Ministry of Education and Science and its departments[15]. The Ministry of Education and Science cooperates with the Ministry of Labour and Social Policy (Labour Market Department), which is responsible for lifelong learning primarily for the unemployed and certain groups of jobseekers[16]. At the regional level, lifelong learning institutions are managed by voivodship self-governments, which, for example, keep a register of training institutions in their area, and district self-governments that establish, run and finance lifelong learning institutions and vocational training centres. Municipal self-governments are responsible for the management of primary schools for adults[17].

/    In Finland, the management of the lifelong learning system belongs to the responsibilities of the Ministry of Education and Culture, whereas labour market-oriented vocational training – the Ministry of Economy and Employment. The activities carried out by the two ministries are mainly coordinated at the working group level, with the Council for Employment, Education and Economic Affairs overseeing the whole. Members of the Council include the representatives of the two ministries and, in addition, the Ministry of Home Affairs, the Ministry of Social Affairs and Health, the Ministry of Finance and the social partners, owing to which it can ensure a broad perspective and a comprehensive approach to decision-making. The work carried out by the Ministry of Education and Culture is also supported by the Finnish National Agency for Education, which develops educational standards, core curricula and qualification requirements. A characteristic distinctive of the management of the lifelong learning system in Finland is the involvement of municipalities in the allocation of financial resources, the recruitment of teachers and trainers and the design and implementation of curricula, among others, in the area of general secondary education and liberal adult education. Centres and institutions offering education and training services are highly autonomous. The most important institutions participating in the management of adult lifelong learning in Poland and Finland are shown in Table 3.3.

15  EURYDICE, *Polska. Zarządzanie i kierowanie edukacją na szczeblu krajowym i/lub regionalnym (szczebel województwa)*, https://eacea.ec.europa.eu/national-policies/eurydice/content/administration-and-governance-central-andor-regional-level-56_pl, [access: 21.05.2022]

16  The tasks of the Labour Market Department include: defining goals and directions for the development of vocational education, designing system solutions to support the acquisition of competencies by the unemployed and working people, as well as creating and disseminating tools and methods for supporting the development of the unemployed and working people. Cf. EURYDICE, *Polska. Podział odpowiedzialności*, https://eacea.ec.europa.eu/national-policies/eurydice/content/distribution-responsibilities-53_pl, [access: 21.05.2022]

17  *Ibidem*

**TABLE 3.3   POLAND VS FINLAND
– INSTITUTIONS MANAGING LIFELONG LEARNING**

| POLAND | FINLAND |
|---|---|
| • Ministry of Education and Science<br><br>• Ministry of Labour and Social Policy (Labour Market Department)<br><br>• municipal self-governments (only primary schools for adults)<br><br>• voivodship and district self-governments | • Ministry of Education and Culture<br><br>• Ministry of Economy and Employment (education for labour market needs)<br><br>• Council for Employment, Education and Economic Affairs (coordinating the activities of the above-mentioned ministries)<br><br>• Finnish National Agency for Education<br><br>• Finnish Centre for the Evaluation of Education<br><br>• 311 municipalities (general adult secondary education and liberal adult education[18]) |

Source:  own study based on EURYDICE, *Polska. Zarządzanie i kierowanie edukacją na szczeblu krajowym i/lub regionalnym (szczebel województwa)*, https://eacea.ec.europa.eu/national-policies/eurydice/content/administration-and-governance-central-andor-regional-level-56_pl, [access: 21.05.2022] and OECD, *Continuous Learning in Working Life in Finland*, https://www.oecd.org/els/continuous-learning-in-working-life-in-finland-2ffcffe6-en.htm, [access: 15.05.2022]

## POLAND VS FINLAND
## – FINANCING OF THE LIFELONG LEARNING SYSTEM

/   Obtaining data on the total amount of money allocated by countries to finance lifelong learning poses a number of difficulties, as it is not reported separately and is usually perceived as part of general expenditure on education. In Poland, there is no all-encompassing model for the financing of adult education. School forms are financed from the educational part of the general subvention, while out-of-school ones receive funding from the educational part of the general subvention and the Labour Fund, the State Fund for Rehabilitation of Disabled People, European funds, budgets of central offices (education of specific professional groups e.g. civil servants, doctors, teachers) and private funds, including employing establishments[19].

/   In Finland, adult education is financed by the government, employers and also employees. In 2018, an attempt was made to estimate expenditure on lifelong learning. It was assumed that a total of 8.4% of GDP or EUR 18.9 billion was spent in 2017, of which EUR 4.17-4.67 billion was spent on adult education[20].

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18  See footnote 14.
19  For more information see: EURYDICE, *Polska. Finansowanie kształcenia dorosłych*, https://eacea.ec.europa.eu/national-policies/eurydice/content/adult-education-and-training-funding-56_pl, [access: 20.05.2022]
20  OECD, *Continuous Learning…*, op. cit.

Much of the cost has been covered by private employers, who – depending on estimates – pay €1-1.5 billion per year, and public employers spending €174 million on training[21]. Individuals also contributed to the costs, spending around €500 million on secondary school courses, vocational training and other forms of adult education[22]. In Finland, employees can, under certain conditions, benefit from various forms of educational support. For example, they can take unpaid leave for training purposes lasting 2-15 months and receive financial support in the form of a training allowance, or they can apply for a grant to obtain further or specialist qualifications. The comparison of the most important aspects of financing lifelong learning in Poland and Finland is presented in Table 3.4.

**TABLA 3.4  POLAND VS FINLAND**
**– FINANCING LIFELONG LEARNING (KEY ASPECTS)**

| POLAND | FINLAND |
| --- | --- |
| • financing state schools and adult education institutions is part of the education financing system<br><br>• private schools and adult education institutions are co-financed by grants from the budgets of local self-governments<br><br>• European funds and aid schemes are important<br><br>• in the case of certain professional groups lifelong learning is financed from the budgets of central offices<br><br>• training institutions may receive public funding[23]<br><br>• adults can, under certain conditions, benefit from the support system[24]<br><br>• employers can obtain funding from the National Training Fund[25]<br><br>• expenditure on lifelong learning is perceived rather as costs | • the system of lifelong learning is co-financed by the government, employers and employees<br><br>• training costs for employees are relatively low<br><br>• public investment is on a high level<br><br>• employees can benefit from the existing support system (unpaid leave for training purposes, training allowance or grants)<br><br>• expenditure on lifelong learning is seen as an investment that will pay off |

Source:  own study based on EURYDICE, *Polska. Finansowanie kształcenia dorosłych*, https://eacea.ec.europa.eu/national-policies/eurydice/content/adult-education-and-training-funding-56_pl, [access: 20.05.2022] and OECD, *Continuous Learning in Working Life in Finland*, https://www.oecd.org/els/continuous-learning-in-working-life-in-finland-2ffcffe6-en.htm, [access: 15.05.2022]

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21  *Ibidem*
22  *Ibidem*
23  Zob. EURYDICE, *Polska. Finansowanie kształcenia…*, op. cit

24  *Ibidem*
25  *Ibidem*

## THE SYSTEM OF LIFELONG LEARNING IN POLAND AND FINLAND – KEY DIFFERENCES

/ Successful implementation of the lifelong learning system requires a comprehensive approach that involves the introduction of appropriate solutions simultaneously in the areas of structure, management and financing. The Finnish adult education system, in comparison with the Polish one, shows not only greater consistency within the areas mentioned, but also a greater degree of integration between them. What mainly draws attention, however, is the different level of awareness and attitudes of Finns towards the concepts of lifelong learning on which the lifelong learning system is based. Finns believe that Finland's prosperity and the competitiveness of its economy are based on expertise which everyone should possess and develop. Employers think that educating employees is an investment that will bring tangible benefits, whereas employees have a very positive attitude towards lifelong learning and comprehensive education. It is worth noting that widespread and equal access to education, its low cost for employees, meeting individual training needs according to the individual's career path and the increasingly widespread use of distance learning methods act as major facilitators. They allow of not only rapid modification of curricula and its adaptation to the needs of learners, but also greater time flexibility in the forms of education offered and reduced travel time to the place where participants take part in educational activities. In the coming years, Poland is going to modify both the structure and the way the lifelong learning system is managed and financed. However, without a change in the awareness, mentality and attitudes of those participating in it, the chances that these changes will bring significant and expected results are rather low (Figure 3.1).
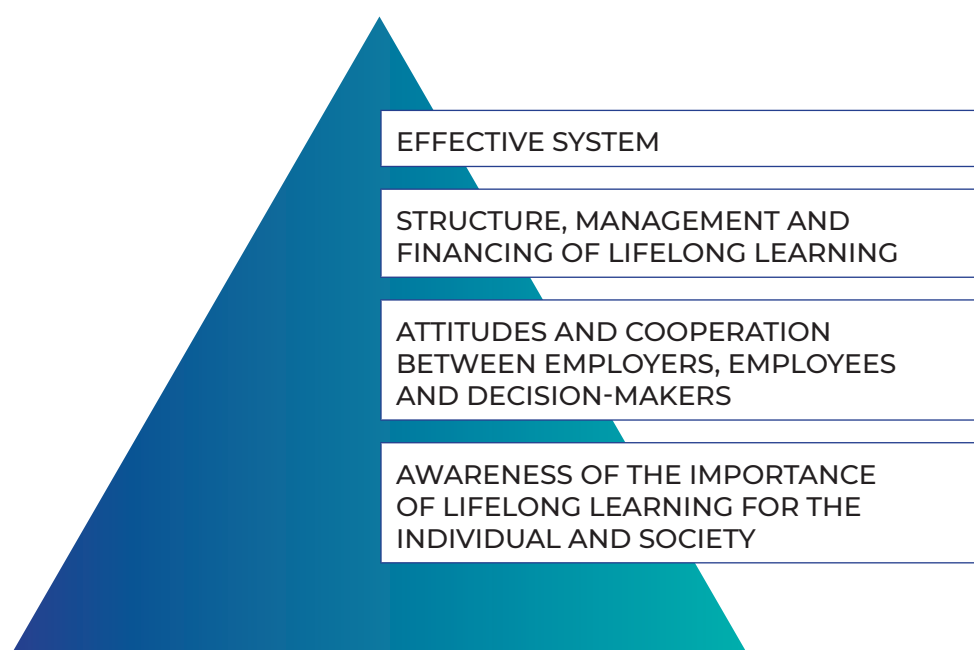


Fig. 3.1    Comprehensive lifelong learning model
Source:    own study

# 4. RESULTS OF A STUDY ON LIFELONG LEARNING IN POLAND IN THE AREA OF MODERN TECHNOLOGIES IN THE ENTERPRISE SECTOR

/ The main aim of the quantitative research carried out as part of the *Go4NewTech* project was to obtain information on the use of ICT technologies in service companies (the SME sector) and the improvement of employees' competencies in this area. We strove to identify the competency gap in experienced employees and their training needs, as well as the subject scope of potential training offers to better prepare them for changes resulting from digitalisation and the practical introduction of Industry 4.0 elements. We were mostly focused on employees aged 45+, who, according to the preliminary diagnosis, have the greatest problems in using modern solutions on a daily basis. The two target groups included:

- employers in service companies (the SME sector) represented by a person who is a decision-maker for hiring in the company or who is responsible for upgrading the skills of employees (e.g. an owner, a managing director, the head of department, etc.);

- employees 45+ currently working in SMEs in the B2B services sector or those that have service departments/positions for internal needs.

/ The survey was conducted in April-June 2020 on representative samples (N = 700 in the group of employers and N = 500 in the group of employees 45+) using CATI and CAWI techniques based on specially prepared questionnaires; the duration of the interview was approximately 12–15 minutes. In the following section, we present the selected results of the survey with a commentary resulting from the observation of the testing phase of the model solution developed in the project (the beginning of 2021–July 2022).

## SELECTED RESULTS OF THE SURVEY CONDUCTED AMONG EMPLOYERS FROM THE SME SECTOR

/ In the group of employers, the sample reflected the population of companies by region and employment size. The results were analysed in terms of company profile, number of employees and hiring mature employees. In order to increase the transparency of comparisons for company size, 4 groups were created according to the number of employees: 10-19 (so-called small-small companies), 20-49 (so-called large-small), 50-99 (so-called small-medium), 100-249 (so-called large-medium). Most of the results received

were in line with initial assumptions, but some came as a surprise. As expected, it appeared that the awareness of the need to invest in IT skills of their employees increases with company size. On average, 58% of company representatives did not see a need to improve the competencies of their employees, but among the representatives of small companies this was as high as 60%, and among medium-sized companies this percentage dropped to 46%. The representatives of medium-sized companies, compared to small ones, were more likely to indicate the usefulness of IT training and knowledge in this area.

/    What was surprising was the widespread conviction among SME representatives that in terms of their IT solutions they are well or very well prepared to deal with external customers (nearly 80% of the respondents answered "yes"), production, communication, contractors, banks or offices (around 75% of the respondents) or internal customers (71%). The results of small and medium-sized companies were not statistically different. Somewhat surprising was employers' good or very good assessment of their employees' level of competencies, which they felt were sufficient to switch to remote working in the Covid-19 pandemic and lockdown situation. Nearly 70% of the respondents said so, and in medium-sized companies this percentage amounted to 77%. On the other hand, only 6% of company representatives admitted that certain competencies were lacking, mainly those related to Internet communication and the use of instant messaging.

/    More than 2/5 (41.9%) of the representatives of companies hiring people aged 45+ confirmed that they invest in the development of IT skills of this group. According to the respondents, the main reasons for the lack of interest in IT training (participation on one's own initiative or delegating employees) are the lack of need to participate in this type of activity (34%) and inappropriate subject matter of training (29%). The most important factor motivating employers to train their employees, especially mature ones, is the belief that it will help the company (68%) and that the training offered by external entities is free of charge (65%). We noticed a correlation between the assessment of the company's preparation and investment in the development of their employees. Significant differences were found between those who invest (answer: YES) and the other groups. The former significantly better assess the company's preparation to use modern technologies than the other groups.

/    The areas where modern technologies are used most frequently include communication (72% of responses 4 and 5 on a five-point scale), improving the quality of services provided (65%), data analysis (61%), and resource sharing (60%). The least often used were integrated management systems (54%) and remote work support (51%). During the Covid-19 pandemic, 54% of companies found new areas where the use of modern technologies appeared to be necessary. The predominant topics were related to the use of the Internet (65%), including the ability to work remotely (33%), the use of instant messaging (31%) and remote customer service (8%). Preferred topics of training: data (72%) and Internet security (70%), data analysis using spreadsheets (68%), searching for information (65%) and remote communication (61%). The least frequently indicated topics concerned big data (44%) and using 3D printers (38%).

/    When asked about the increased interest in IT training influenced by the Covid-19 pandemic situation, 64% of the respondents answered "yes". From the perspective of the testing phase of the model solution, this can definitely be judged in terms of a declaration rather than real action.

/    According to the respondents, the change agent, that is, the person who could effectively encourage employees in the company to improve their competencies, especially IT ones, should be their immediate supervisor (42% of answered "yes"). Similar results were obtained for the group of mature employees.

/ It was found that employers' responses varied depending on company size, and the main differences concerned mainly (cf. Figure 4.1):

• The extent of use of modern technologies: the smallest companies (10-19 employees) were found to use modern technologies less frequently, in contrast with companies with 20-49 and 100-249 employees.

• Assessment of competency gaps among employees: employers from smallest companies (with 10-19 employees) noticed competency gaps the least frequently, in contract with companies employing 20-49 and 50-99 people.

• Number of training courses in which employers are interested (selected from a list of 12 proposals): it depends on the size of the company – the larger the company, the greater the interest; when analysing the answers to this question, we found some statistically significant differences between the opinions of the respondents representing companies of different sizes.

• Interest in modern technology training among mature employees – the assessment of drivers. It was found that the larger the company the respondent represented, the greater the impact of potential drivers. Also in this case, statistically significant differences were found between the opinions of the respondents representing companies of different sizes.

• Investing in employee development. In this area, the answers of the representatives of the smallest companies were different from those given by other respondents – small companies (10-19 employees) are less likely to invest in employee development, mainly because employers do not see the need to do that.
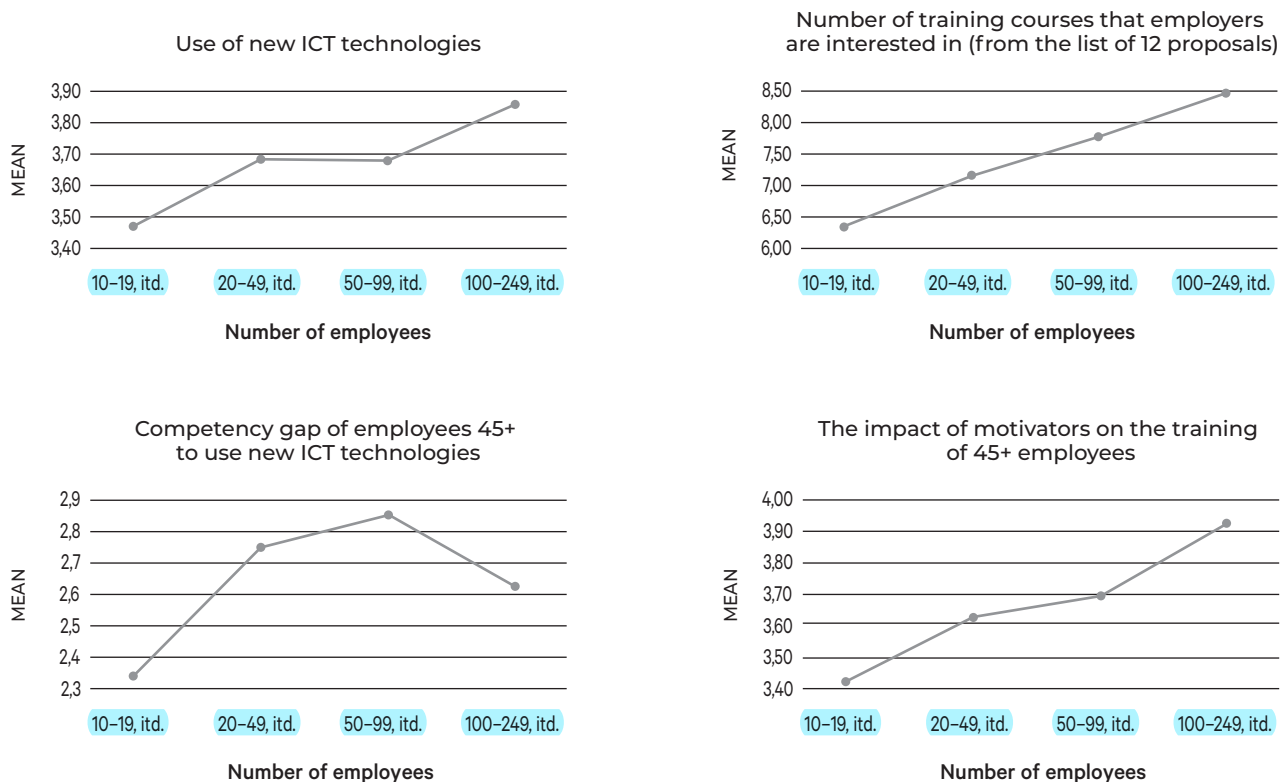


Fig. 4.1    Answers given by employers vs. company size – areas with significant differences

/  Slight differences were observed in the answers given by employers' vs other metric characteristics:

- TYPE OF ACTIVITY – no significant variation. It can only be pointed out that manufacturing companies invest less frequently in the development of competencies of employees 45+ in the area of modern technologies than other companies; the highest investment rate was found among trading companies, followed by service companies.

- GENDER – significant differences were found only in the assessment of the company's preparation for the use of modern technologies and the assessment of the impact of drivers – men evaluate the company's preparation and the impact of drivers in a less positive way than women do.

## SELECTED RESULTS OF A SURVEY CONDUCTED AMONG EXPERIENCED EMPLOYEES FROM THE SME SECTOR

/  The sample reflected the population of working people 45+ by age, gender and region (NUTS 1 level). The results were analysed in terms of characteristics such as place of residence, gender, age, company size and areas of activity. As in the group of employers, in order to increase the transparency of comparisons in the case of company size, 4 groups were created according to the number of employees: 10-19 (the so-called small-small companies), 20-49 (the so-called large-small), 50-99 (the so-called small-medium) and 100-249 (the so-called large-medium). In general, the respondents evaluated their competencies in a highly positive manner – 61% of them stated that they were well prepared to use modern technologies, and nearly ¾ of this group (72%) declared no difficulty in adapting to technological change. Only 1 in 4 respondents admitted that they had some problems with using modern technologies. We have found the following correlation – the larger the company and the higher the position, the better the employee's self-assessment of their own skills, the ease of adaptation and the ability to acquire knowledge. Among the most well-known areas of the use of modern technologies, the respondents included data analysis and presentation (at least 60% of the respondents indicated that they knew solutions in this area). It is worth noting that more than 80% of the respondents declared their willingness to take part in training in modern technologies, if only the employer organised it. What motivates employees to use or learn modern technologies is primarily an increase in salary (80% of indications) or the chance to improve the quality of work (81%). Depending on the area of use, on average 50-60% of employees 45+ felt that their company was well or very well prepared to use new ICT.

/  In terms of assessing their own competencies, female respondents thought that they were less prepared to use modern technologies (mainly in the area of knowledge and ease of adaptation to technological change), but at the same time open to improving their skills. Taking into account the fact that they are usually more willing to learn than men (participation in various forms of lifelong learning averages at least 60/40 in favour of women), it is likely that ICT topics intimidate them. In fact, women belong to a group which is less frequently invested in, which undoubtedly affects their self-confidence and knowledge of this area. Moreover, compared with men, women are more often convinced that there is no need for such investment. Such a belief might be the result of fear of not being able to keep up with the group during training in modern technologies.

/  No significant differences were found in the self-assessment of competencies due to other characteristics such as age, place of residence and business sector. In the case of answers concerning competency gaps, no significant differences were found when it comes to gender (although women

indicated greater problems in this area) or age (although the respondents from the oldest age groups also indicated bigger competency gaps than younger survey participants).

/ When it comes to willingness to invest in competency development, an inverse correlation was found in relation to the company size – the smaller the company was, the less frequently investments in employees took place, but also the need for such investments was perceived much less frequently. Taking into account the age of respondents, it was found that the oldest group (60–65 years old) is the least invested in, although its representatives often notice such a need. Only 1 in 4 respondents from the employee group confirmed that their employers invest in the development of competencies of employees 45+, mainly by organising training (80%) and providing appropriate equipment (67%). Importantly, according to the respondents, as many as 1/3 of employers do not invest in this type of training, although they see the need for it.

/ In the area of company's preparation for the use of modern technologies, the size of the company is a differentiating characteristic. Statistically significant differences were found between the respondents representing companies of different sizes, with small-medium companies achieving the best results (see Figure 4.2). The correlation between the preparation of the company and the openness of employees to use modern technologies was also analysed and it was found that the better prepared the company, the greater the openness of employees.
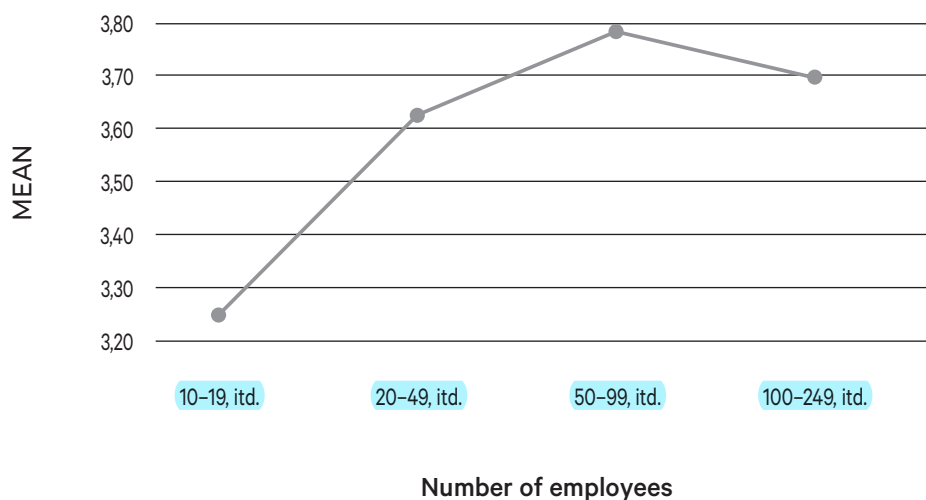


Fig. 4.2   Average answers to the question about the evaluation of the company's
          preparation to use modern technologies – company size
Source:   own study

/ The respondents were asked to evaluate their knowledge/use of modern technologies within 12 selected areas and to assess their willingness to deepen their knowledge and skills in these areas (they were asked about basic and advanced data analysis, databases, sharing of electronic resources, integrated management systems, etc.). In 6 out of 12 areas, the following correlation was found – the more familiar the respondents were with the area, the more they wanted to learn about it at a more advanced level.

/ The respondents were also asked to evaluate the impact of potential factors increasing their interest in learning about and using modern technologies (on a five-point scale, where 1 means "No impact" and 5 – "The strongest impact"). There were ten response options to choose from:

1. Relevant professional challenges/tasks
2. Official order
3. Promotion
4. Increase in salary
5. Possibility of using them also in private life
6. Willingness to improve the quality of work
7. Willingness to be on a par with younger employees
8. Fear of losing current job due to lack of competencies
9. Loss of opportunity to find a new job
10. Not being able to perform professional tasks effectively, e.g. communicate with customers

/ When analysing the importance of the specific answers, we assumed that categories 1-7 were drivers (carrots), whereas categories 8-10 – stressors (sticks). This assumption was confirmed by the analysis of the respondents' answers because their factor structure was two-dimensional. The two factors meant that the answers were strongly correlated within them, but less between them. That is, if someone was motivated by a given driver or stressor, it meant that other drivers or stressors motivated them as well. Importantly, all factors were marked by the respondents as motivating them to use and acquire knowledge about modern technologies.

/ In the case of factors potentially increasing employers' interest in using and learning modern technologies, there were seven possible answers to choose from:

1. Requirements imposed by external customers
2. The need to know them in order to carry out professional tasks
3. Lack of staff with the right skills willing to work
4. The need to work remotely
5. A belief that it will help the company
6. Subsidised training in IT
7. Free training offered by external providers
8. A sufficient training offer to meet the needs of people 45+

/ According to mature employees in the SME sector, employers are most often motivated by free training offered by external entities (category 7, mean score: 4.00) and the belief that this will help the company (category 5, mean score: 3.94). The least encouraging factors include the adequate training offer available on the market for people 45+ (category 8) and the need to work remotely (category 4), both with a mean score of 3.70. While analysing the respondents' answers we noticed a univariate structure, which means that, according to the respondents, if the employer is susceptible to drivers, then all the indicated ones have a similar effect on him or her. We found statistically significant differences in terms of company size, with small-medium ones (with 50-99 employees) being the most motivated.

/ When asked if they would participate in training in modern technologies supposing their employer organised it, the vast majority of respondents answered "yes" (82%). Specific questions concerned the preferred way of organising the training and its subject matter. Mature employees opted for external, face-to-face and group training covering several topics. Regarding the potential topics, the respondents had 12 areas to choose from. The topics that prevailed included Internet or data security (80% of indications each), searching for information effectively and data analysis using spreadsheets (about 70% of

indications each). The analysis of the number of potential training areas selected by the respondents provides interesting information – it turned out that the largest group of respondents is interested in all possible types of training (cf. Figure 4.3). A group of employers was also asked about their interest in having their employees participate in similar training, but the results showed that they are much less open to training and show less interest in referring their employees to such activities.
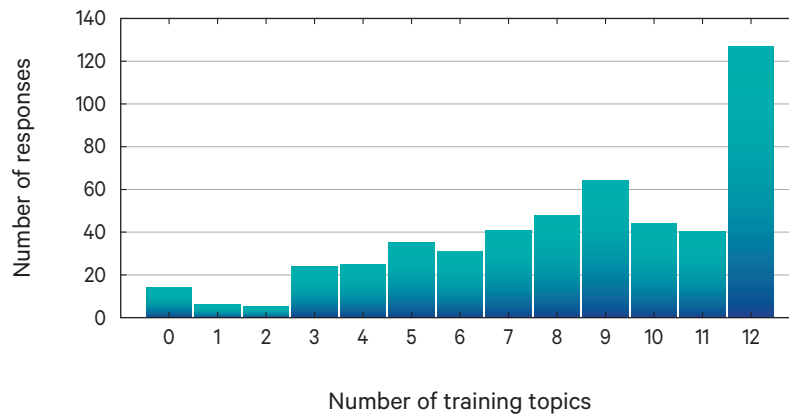


Fig. 4.3 Interest in training – a total of "yes" given by the respondents

/ Mature employees were also asked to evaluate the preparation of themselves and of the company they work in for the kind of work that the Covid-19 pandemic has necessitated. According to the results obtained, they assessed their preparation slightly better than that of the company. The correlation of the two answers was strong enough for the average of the two questions to measure a single attribute – a sense of preparation for remote working forced by the pandemic. The analysis of answers in terms of metric characteristics did not indicate variation by gender, age or the place of residence. On the verge of significance was the correlation between the preparation of the company and its size – large-small companies performed best.

## THE COMPARISON OF RESULTS – EMPLOYERS AND MATURE EMPLOYEES IN THE SME SECTOR

/ Owing to the fact that both groups had a very similar questionnaire, it was possible to compare answers given by employers and mature employees working in the SME sector. For most of the questions, employers' answers were more positive than those of employees. The questions concerned different areas of the company's preparation, including dealing with external customers, contractors, internal customers, offices, banks and daily business activities. The analysis of the answers for both groups indicated a univariate structure with a high correlation of variables. It means that instead of analysing questions about different areas of company's preparation separately, they can be aggregated because of the similar results of factor analysis and reliability analysis (one latent characteristic reliably measured). A comparison of the mean scores in both groups showed the significance of the difference in response to the subjective perception of the company's preparation for the use of new technologies – employers had a significantly better perception of this preparation than employees (cf. Figure 4.4).

**SERVICE OF:**
- external clients
- contractors
- internal clients
- offices, banks
- everyday business activities
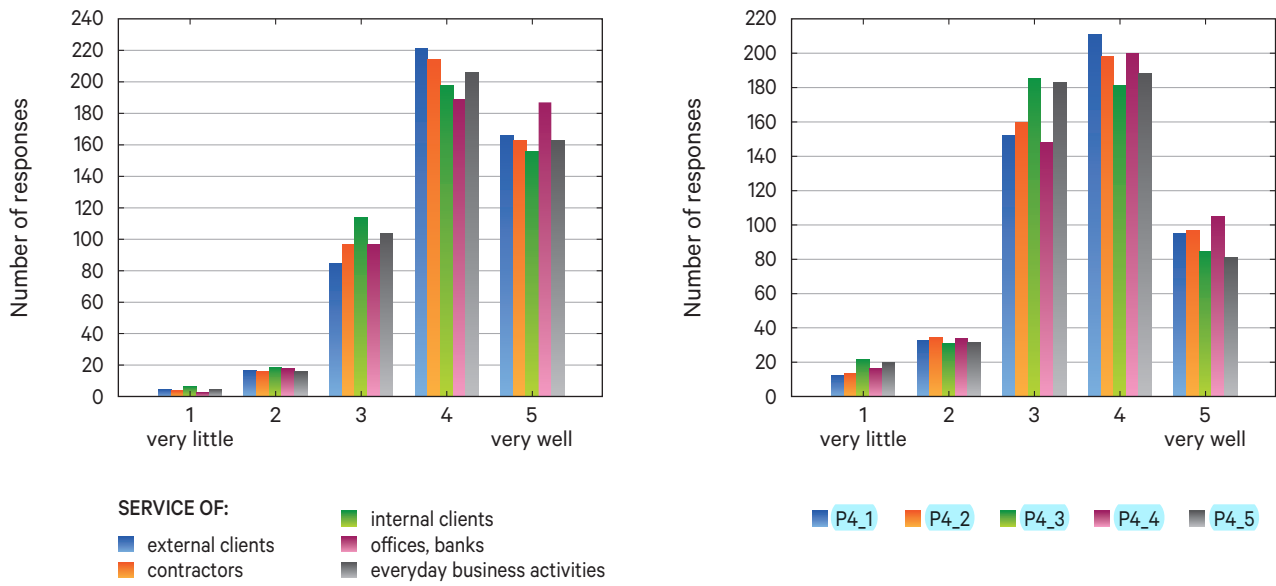
P4_1  P4_2  P4_3  P4_4  P4_5

Fig. 4.4   Distribution of answers concerning the evaluation of the company's preparation
in different areas to use modern technologies – the figure on the left shows the
responses of employers, whereas the one on the right – mature employees

Source:   own study.

/   Significant differences were also observed in the answers to the question about investing in the development of employees' competencies (cf. Figure 4.5). Employees were much less likely to agree with the statement that employers invest in them (41.9% of employers vs. only 25.6% of employees saying "yes"). It is worth reflecting on the reason for such significant variation. Perhaps one reason for this is that some of the actions taken by employers (which they believe to be investments in employees) are not perceived in the same way by employees.
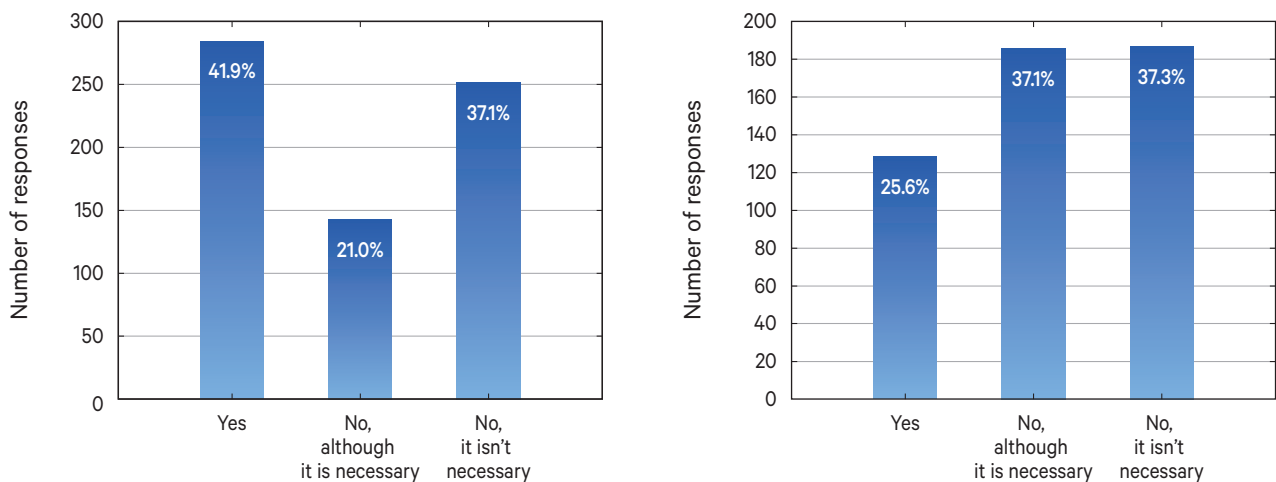


Fig. 4.5   Distribution of answers to the question about investing in the development of employees' competences –
the figure on the left shows the responses of employers, whereas the one on the right – mature employees

Source:   own study.

## SUMMARY

/ As indicated earlier, the results of the survey in the area of company's preparation and the assessment of employees' IT skills came as a bit of a surprise. The overly positive evaluation of both the preparation of companies in the SME sector for the use of modern technologies and the employees of these companies is probably due to a low awareness of the opportunities offered by modern technologies. The positive self-assessment and lack of awareness of gaps or deficiencies may also result from the lack of need to use new technologies at work, the lack of challenges and tasks requiring them. Taking into account the testing phase of the developed solution, it should be stated that still employers and employees from the SME sector associate modern technologies with spreadsheets and automation of office work. Apparently, there is not much interest in more advanced areas such as databases, big data or advanced statistical methods. What is worse, despite declarations of greater interest in Internet or data security training as a result of the Covid-19 pandemic, people are coming back to the belief that their level of knowledge and skills in this area is sufficient. Admittedly, they do see the need for further education in this area, but the overload of daily duties seems to be a sufficient explanation for not being able to participate in any educational activities. The majority (80% or more) of employees aged 45+ declared that they were open and ready to improve their skills in modern technologies. Unfortunately, most of these declarations still remain mere declarations – a relatively large offer of free IT training currently available on the market does not evoke much interest. Tiredness, overloading with work and day-to-day responsibilities, uncertainty about the future and, above all, the lack of real benefits for employees from improving their own competencies are not favourable. People do not seem to notice any connection between training activity and benefits for those who are active in a given area, e.g. financial gratification, promotion prospects, increased attractiveness of the job, etc. There are no models of lifelong learning functioning in the public space either. The analysis of the answers to the detailing questions showed that the majority of companies employing mature workers do not feel the need to improve their competencies. Such an attitude might result from the lack of awareness about the need to use modern technologies as well as the need to develop employee's competencies in this area.

/ In the light of both the results of the research and the experience from the testing phase, it seems that convincing employers of the need for continuous competency development both by themselves and by their employees is a key task in the area of lifelong learning in Poland. Employers are reluctant to invest in the development of skills of their employees, especially in the skills connected with modern technologies of employees 45+. Apparently, there is still a stereotype among employers that training is a short-term cost rather than a long-term investment, so even free training provided by external providers does not evoke any interest. Unfortunately, this proves that the campaigns promoting the idea of lifelong learning in Poland did not bring desirable results. Without addressing them properly, training courses are not likely to be effective. When it comes to the hierarchy of factors motivating employees 45+ to improve their competencies and participate in training, it is as follows: the chance to improve the quality of their work, the opportunity to use their skills in their private life, appropriate professional challenges and an increase in salary.

/ For SME employees, the most significant skills include the ability to use commonly available technologies, programmes and tools that do not require a large financial investment, for example, the ability to use spreadsheet effectively, the ability to search for resources on the Internet or the ability to configure hardware. Remote communication is also an important issue. SMEs do not usually have a dedicated service team responsible for IT issues, so having employees knowledgeable about data or Internet security is crucial to the operation of the company. Taking into account the rapidly increasing amount of data and the need to analyse it and draw conclusions, it is worth equipping SME employees

with the competency to use databases and work with large data sets. Trends observed in the market in terms of introducing new products and testing them before starting the production line point to the enormous opportunities offered by the use of 3D printing. This technology also makes it possible to produce, for example, advertising items at a relatively low price compared to the cost of ordering them, which is particularly crucial for small businesses.

/   It is worth making employees aware of the need to constantly improve their competencies and skills, particularly in the area of IT technology. Despite the rapid development of technology, it is unlikely that all activities and processes will become fully automated, especially in the service sector. According to experts, the more likely scenario is that technology will not be able to function without humans. Consequently, employees should acquire new competencies and be ready to retrain frequently. The aspect that conditions the functioning of many people on the labour market is greater acceptance of technological transformation. In the case of the SME sector, it is not about Industry 4.0 but rather digital transformation. There are factors which are more important than technological ones, for example, social, environmental or regulatory and legal. One of the most important issues is the preparation and effective involvement of employees, encouraging their openness to change and new trends, including those resulting from digital transformation. There is a fundamental difference between SMEs and large companies when it comes to the awareness of digital transformation – many SMEs have to operate here and now, and they are not prepared for rapid change.

# 5. RESULTS OF A POLISH-FINNISH COMPARATIVE STUDY ON THE IMPORTANCE OF DIFFERENT TYPES OF COMPETENCIES AMONG ENTERPRISE STAFF

/   Competencies possessed by employees are key components of human capital and represent a valuable resource enabling a company to function in the proper manner. At the time of intensive technological development and rapid changes in various spheres of life, employers' requirements are increasing and there is a growing demand for employees with numerous skills and competencies. Skills of a diverse nature, both soft and hard ones, are important on the labour market. Professional qualifications and attitudes towards work and the environment are significant, too. The multiplicity of competencies and their diversity became the rationale for undertaking research on the degree of their importance at present and in the 2030 perspective in two countries with different labour market conditions – Poland and Finland.

## METHODOLOGY

/   The survey was conducted using the CAWI method in 2021 on representative samples of employers from Poland and Finland representing all sectors of the economy. We took into account entities with at least 5 employees. The collected quantitative research material allows of a comparative analysis of the importance of competencies in the countries under consideration and in the context of the assumed time interval.

/   The survey[26] questionnaire created for employers included a set of 21 competencies (see Fig. 5.1). The respondents were asked to evaluate their importance now and in 2030 perspective in the sector in which their company operated. They were supposed to use a scale from 1 to 10, where 1 meant "not important at all", whereas 10 – "very important". Among the strictly professional competencies, theoretical knowledge and practical skills were distinguished. The area of hard skills included analytical skills and the ability to obtain information (data analysis methods, information search and processing), IT skills (MS Office, databases, big data) and knowledge of foreign languages. As far as soft skills are concerned, the respondents evaluated the importance of cooperation, communication and negotiation skills, aptitude

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26  The study was funded with a grant from the Dean of the Faculty of Management, Wroclaw University of Economics and Business

for working in a team as well as independently, leadership and organisational skills, creativity, innovation and resourcefulness, preparedness for coping with stress and working under pressure. In the survey, the respondents also assessed the importance of selected attitudes, including attitudes towards work, attention to results, self-presentation, willingness to develop and sensitivity to social issues.

| PROFESSIONAL COMPETENCIES | HARD SKILLS | SOFT SKILLS | ATTITUDES |
|---|---|---|---|
| • Theoretical knowledge<br><br>• Practical skills | • Data analysis methods<br><br>• Searching for and processing information<br><br>• Knowledge of MS Office<br><br>• Database searching<br><br>• Big data<br><br>• Knowledge of foreign languages | • Relationship building and cooperation<br><br>• Creativity, innovation and resourcefulness<br><br>• Communication and negotiation skills<br><br>• Leadership skills<br><br>• Working in a diverse team<br><br>• Coping with stress and working under pressure<br><br>• Organisational skills<br><br>• Independence and self-efficacy | • Adaptation to change, willingness to develop<br><br>• Attention to results<br><br>• Attitude towards work<br><br>• Self-presentation<br><br>• Sensitivity to key social issues, e.g. the natural environment |

Fig. 5.1    A set of competencies for assessment
Source:   own study.

/    The assessment of competencies done on the 10-point resulted in characteristics that can be considered quasi-continuous, which allowed us to apply specific statistical procedures. In order to make comparisons concerning the importance of competencies, we used mean scores for the countries analysed to create rankings and to statistically verify the significance of differences – for this purpose, we have done a t-test assuming a significance level of 0.05 and preceding the testing with an assessment of homogeneity of variance (Levene's test). On the other hand, the correlation of characteristics was examined using Spearman's rank correlation coefficient. Since human capital manifesting itself in competency resources is a multidimensional phenomenon, exploratory factor analysis with varimax rotation was also used in order to identify the co-occurrence of assessments relating to different competences. The factor analysis was preceded by a validity check using the Kaiser-Mayer-Olkin coefficient – a measure of the degree of adequacy of the correlation matrix.

## CHARACTERISTICS
## OF THE RESEARCH SAMPLE

/    In total, 414 employers took part in interviews, of which 200 were Finnish and 214 were Polish. Owing to that division the sample can be referred to as balanced in terms of country. 49.3% of the respondents were women and 50.3% – men. The respondents were of different ages, with the youngest being 20 years old and the oldest 74 years old. The mean age was 38.06 and the standard deviation was 11.786, which gives a high variability of 31% (measured by the coefficient of variation). According to the research plan, all the respondents were people having influence on the process of hiring employees and/or the planning of their development paths within the company, i.e. with relevant knowledge concerning competency needs. The sample included entities conducting business activities/enterprises/companies with different numbers of employees. 39.4% of the respondents represented companies with 5-9 employees (excluding owners), 33.1% – companies with 10-29 employees, 14.7% – companies with 30-49 employees and 12.8% – companies with 50 or more employees. The entities operated in various sectors, mainly: other service activities (12.6%), construction (9.2%), trade (6%), industrial processing (5.1%), professional, scientific and technical activities (5.2%), and financial and insurance activities (4.8%).

## ASSESSING THE IMPORTANCE
## OF COMPETENCIES TODAY

/    In order to synthesise and compare the degree of importance of the competencies at the present time, arithmetic means were calculated from the answers given by the respondents (Figure 5.2). The means ranked above the middle of the scale and took values ranging from 6.2 (Big data, in Poland) to
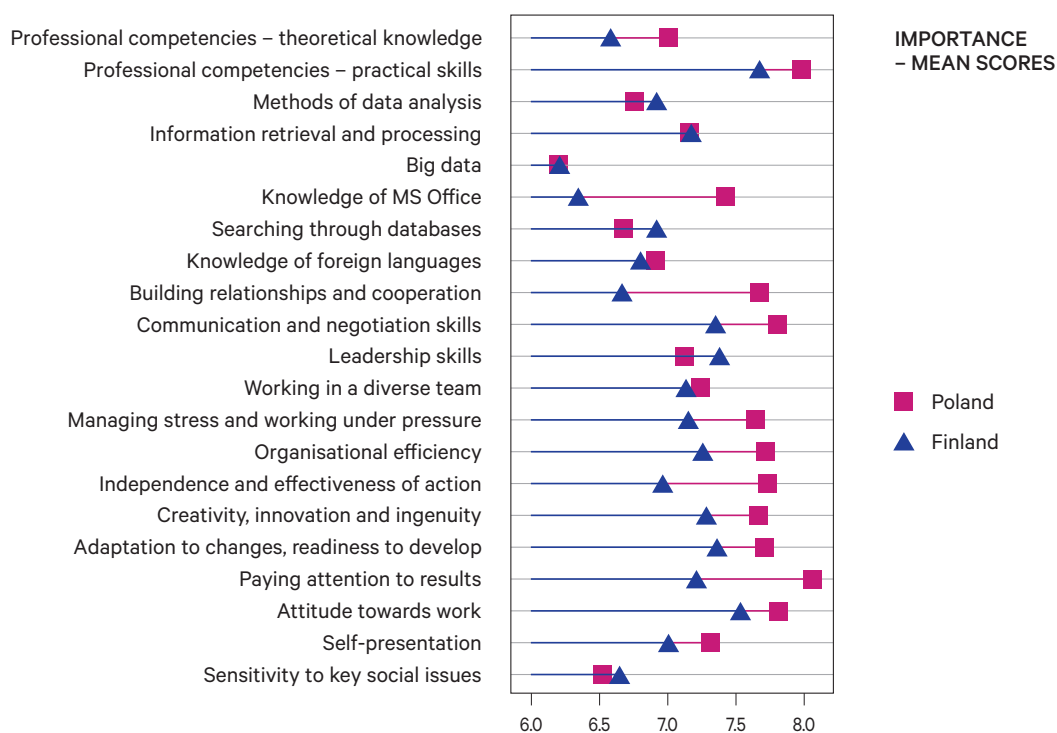


Fig. 5.2    Assessment of the importance of specific competencies in Poland and Finland (currently)
Source:    own study.

8.07 (attention to results, in Poland). It is worth paying attention to the significant differences between the results for the analysed countries in assessing the role of relationship building and cooperation, the knowledge of MS Office software and attention to results. In most aspects, Polish employers evaluated the importance of competencies higher than Finnish ones. However, there are some exceptions- data analysis methods and database searching (hard skills), leadership skills (the area of soft skills) and sensitivity to key social issues (the area of attitudes) appeared to be more important in Finland than in Poland.

/   Mean scores were found to be significantly different in 8 cases (see Table 5.1). For all competencies for which statistically significant differences were found, the mean scores are higher for Poland than for Finland. The differences found relate mainly to soft skills, except for the knowledge of MS Office (hard skills) and attention to results (attitude). It should be noted, however, that for the last two competencies the differences are the largest (1.08 and 0.85, respectively), followed by relationship and cooperation skills (0.99). The results obtained may indicate that the expectations of employers in Poland are higher in the above-mentioned areas.

**TABLE 5.1**   **MEAN SCORES DESCRIBING THE IMPORTANCE OF COMPETENCIES (CURRENTLY) FOR WHICH SIGNIFICANT DIFFERENCES WERE FOUND BETWEEN THE COUNTRIES**

| COMPETENCY | IMPORTANCE – MEAN SCORES | |
| --- | --- | --- |
| | FINLAND | POLAND |
| Knowledge of MS Office | 6,35 | 7,43 |
| Relationship building and cooperation | 6,68 | 7,67 |
| Communication and negotiation skills | 7,35 | 7,81 |
| Coping with stress and working under pressure | 7,16 | 7,66 |
| Independence and self-efficacy | 6,98 | 7,74 |
| Creativity, innovation and resourcefulness | 7,29 | 7,68 |
| Organisational skills | 7,26 | 7,72 |
| Attention to results | 7,22 | 7,72 |

Source:   own study.

/   In addition to the direct comparison of mean scores, it is worth looking at the rankings of the importance of competencies in each country (Table 5.2). The rankings were constructed on the basis of arithmetic means given by the respondents in Poland and Finland, and contain similarities as well as differences. In both countries, competencies such as professional (practical skills), attitude towards work, organisational skills, adaptation to change and willingness to develop were at the top of the rankings. In contrast, the least desirable ones (final rankings) in both countries included theoretical and professional knowledge, language skills, sensitivity to key social issues, database searching and big data.

/   In order to synthetically assess the consistency of the rankings, Spearman's rank correlation coefficient was calculated. As a measure normalised at <0.1>, it measures the strength of the correlation between two rankings. The empirical value of the coefficient was 0.68, indicating significant consistency between the rankings. It can be concluded that employers in Finland and Poland rank the importance of competencies in a moderately similar way.

/   It is worth noting that two elements took identical positions in both rankings: self-presentation (position 12 in the ranking) and big data (position 21 in the ranking). According to the results, the ability to deal with large sets of data was assessed as the least important. It seems somewhat in opposition to current trends in the area of modern technologies and the processing of increasing amounts of data. However, it is necessary to remember that this is one of the highly specialist skills, often related to programming and thus represented by a small group of people, rather than commonly possessed and used by employees. This might be the reason why it was evaluated as generally less important by employers.

**TABLE 5.2   RANKINGS OF IMPORTANCE OF COMPETENCIES (CURRENTLY) IN FINLAND AND POLAND**

| IMPORTANCE | FINLAND | POLAND |
|---|---|---|
| **THE MOST IMPORTANT COMPETENCIES TODAY (RANKING POSITIONS: 1-7)** | 1. Professional competencies – practical skills<br>2. Attitude towards work<br>3. Leadership skills<br>4. Adaptation to change, willingness to develop<br>5. Communication and negotiation skills<br>6. Creativity, innovation and resourcefulness<br>7. Organisational skills | 1. Attention to results<br>2. Professional competencies – practical skills<br>3. Communication and negotiation skills<br>4. Attitude towards work<br>5. Independence and self-efficacy<br>6. Organisational skills<br>7. Adaptation to change, willingness to develop |
| **MODERATELY IMPORTANT COMPETENCIES TODAY (RANKING POSITIONS: 8-14)** | 8. Attention to results<br>9. Searching for and processing information<br>10. Coping with stress and working under pressure<br>11. Working in a diverse team<br>12. Self-presentation<br>13. Independence and self-efficacy<br>14. Methods of data analysis | 8. Creativity, innovation and resourcefulness<br>9. Relationship building and cooperation<br>10. Coping with stress and working under pressure<br>11. Knowledge of MS Office<br>12. Self-presentation<br>13. Working in a diverse team<br>14. Searching for and processing information |
| **THE LEAST IMPORTANT COMPETENCIES TODAY (RANKING POSITIONS: 15-21)** | 15. Database searching<br>16. Knowledge of foreign languages<br>17. Relationship building and cooperation<br>18. Sensitivity to key social issues<br>19. Professional competencies – theoretical knowledge<br>20. Knowledge of MS Office<br>21. Big data | 15. Leadership skills<br>16. Professional competencies – theoretical knowledge<br>17. Knowledge of foreign languages<br>18. Methods of data analysis<br>19. Database searching<br>20. Sensitivity to key social issues<br>21. Big data |

Source:   own study.

/    Interestingly, there were several competencies whose positions in the rankings differed significantly (Table 5.3). The largest difference was noted for leadership skills – Finnish employers gave them very high scores (the 3rd position in the ranking), whereas in Poland they took only the 15th position in the ranking. In Poland, the knowledge of MS Office was quite highly appreciated (11th position in the ranking), whereas in Finland it took the penultimate position in the ranking. The evaluation of importance of relationship building skills, independence and self-efficacy differed by 8 positions in the ranking, with Polish employers evaluating them as more important. In Poland, attention to results was assessed as the most important competency, while in Finland it took the 8th position in the ranking.

**TABLE 5.3   COMPETENCIES WHOSE POSITIONS IN THE RANKINGS DIFFERED THE MOST**

| COMPETENCY | POSITION IN THE RANKING | | DIFFERENCE (FI – PL) |
|---|---|---|---|
| | FINLAND | POLAND | |
| Leadership skills | 3 | 15 | -12 |
| Knowledge of MS Office | 20 | 11 | 9 |
| Independence and self-efficacy | 13 | 5 | 8 |
| Relationship building and cooperation | 17 | 9 | 8 |
| Attention to results | 8 | 1 | 7 |

Source:   own study.

/    The research on the importance of competencies was multidimensional because we analysed the importance of 21 characteristics which concerned different areas (see Figure 5.1). In order to verify whether the respondents' answers could be synthesised using several characteristics, we decided to apply a factor analysis. We carried out a preliminary assessment in order to check whether the correlations were strong enough to use this technique. The Kaiser-Mayer-Olkin coefficients were 0.937 for Poland and 0.954 for Finland. Their values close to 1 indicate the adequacy of the correlation matrix and the validity of using factor analysis. Using principal components and varimax rotation, we isolated 3 factors for Poland explaining 68.1% of the variance and 2 factors explaining 64.7% of the variance for Finland.

/    The competencies represented in the specific factors for Finland are as follows:

- **FACTOR 1:**  professional competencies (theoretical knowledge and practical skills), relationship building and cooperation, communication and negotiation skills, leadership skills, working in a diverse team, coping with stress and working under pressure, organisational skills, independence and self-efficacy, adaptation to change, willingness to develop, attention to results, attitude to work,

- **FACTOR 2:**  methods of data analysis, searching for and processing information, knowledge of MS Office, database searching, big data, language skills, creativity, innovation and resourcefulness, self-presentation, sensitivity to key social issues.

/    In contrast, the breakdown for Poland is as follows:

- **FACTOR 1:**  professional competencies (theoretical knowledge and practical skills), relationship building and cooperation, communication and negotiation skills, coping with stress and working under

pressure, organisational skills, independence and self-efficacy, adaptation to change, willingness to develop, attention to results, attitude to work,

- **FACTOR 2:** methods of data analysis, searching for and processing information, knowledge of MS Office, database searching, big data, foreign language skills,

- **FACTOR 3:** leadership skills, working in a diverse team, creativity, innovation and resourcefulness, self-presentation, sensitivity to key social issues.

/ The isolated factors indicate that it is possible to distinguish groups of competencies with correlated assessments. In the case of Finland, the first factor includes professional competencies, soft skills except for creativity, and attitude to work together with attention to results. The second factor includes hard skills, creativity and elements from the group of attitudes – self-presentation and sensitivity to social issues. In the case of Poland, the first factor includes professional competencies, some soft skills and attitudes. The second factor includes all hard skills, whereas the third one – selected elements representing both soft skills and attitudes. It is worth emphasising that for both analysed countries hard skills were included in one factor (in the case of Poland, they formed a separate one), which indicates a strong correlation between respondents' answers in this area. The attribution of other skills and competencies to factors was not that clear. Such a factor structure indicates a certain disparity in the perception of importance of hard skills compared to other competencies.

## THE IMPORTANCE OF COMPETENCIES TODAY AND IN THE FUTURE – A 2030 PERSPECTIVE

/ At the time of intense change in all spheres of life, including those caused by technological advances and digitisation, the labour market is evolving, with changing conditions and competency requirements. Therefore, when exploring the importance of competencies, reference was made to both the present and the future, indicating 2030 as a reference point. The set of competencies was the same and the answers were given on the same 10-point scale, allowing of comparisons. The differences between the mean scores for the future and the present are shown in Figure 5.3.

/ Almost all calculated differences are positive, which means that the respondents believe the importance of competencies will increase in the future. The only exception is the assessment of the knowledge of MS Office in Finland – in this case the mean score for 2030 was marginally lower than the average for the present. It should be noted, however, that the differences in mean scores are not very large. Therefore, the results should be seen as a certain general tendency indicated by the respondents saying that the importance of competencies will increase over time. It is significant that Polish employers anticipate a greater increase in the importance of competencies than the Finnish ones, which is particularly visible in issues concerning database searching, coping with stress, creativity, adaptation to change, self-presentation and sensitivity to key social issues.

/ It is interesting to see a comparison of rankings concerning the importance of competencies in each country with regard to the future (Table 5.4). The consistency of rankings between the countries was evaluated using Spearman's rank coefficient, which had a value of 0.48. The similarity of the rankings is lower than for the current situation (rankings in Table 5.2) and does not indicate a very coherent prioritisation of the importance of competencies in the future in Poland and Finland. The biggest difference was noted for leadership skills, which will be the most important in Finland (3rd position), whereas in

Fig. 5.3   Differences in mean scores concerning the importance of specific competencies
in Poland and Finland – 2030 vs. the current situation
Source:   own study.

Poland they are at the end of the ranking (18th position). Relationship building and cooperation are the skills that are much more valued in Poland than in Finland (9 positions higher in the ranking); the same is true of independence and effectiveness (8 positions higher than in Finland). Finnish employers, on the other hand, pay more attention to the ability to work in a diverse team and proficiency in using data analysis methods (both categories 8 positions higher than in Poland).

/   Another interesting issue is the extent to which the rankings in two different countries, relating to the present and the future, are similar. In order to explore this, we relied on Spearman's rank correlation coefficient, taking into account the rankings in Tables 5.2 and 5.4. We obtained coefficients of 0.88 for Finland and 0.93 for Poland, which allows us to conclude that employers in both countries perceive the present and future competency hierarchy in a similar way. In the case of Poland, the biggest differences were noted for foreign language skills (increase in future importance by 5 positions), adaptation to change and willingness to develop (increase in future importance by 4 positions) and communication and negotiation skills (decrease in future importance by 4 positions). In Finland, the largest discrepancies were found for self-presentation (decrease in future importance by 6 positions), creativity, innovation and resourcefulness (decrease in future importance by 5 positions) and information processing and data analysis methods (increase in future importance by 5 positions).

**TABLE 5.4   RANKINGS OF IMPORTANCE OF COMPETENCIES (IN THE FUTURE – 2030) IN FINLAND AND POLAND**

| IMPORTANCE | FINLAND | POLAND |
|---|---|---|
| **THE MOST IMPORTANT COMPETENCIES IN THE FUTURE (RANKING POSITIONS: 1-7)** | 1. Professional competencies – practical skills<br>2. Attitude towards work<br>3. Leadership skills<br>4. Searching for and processing information<br>5. Adaptation to change, willingness to develop<br>6. Organisational skills<br>7. Working in a diverse team | 1. Attention to results<br>2. Professional competencies – practical skills<br>3. Adaptation to change, willingness to develop<br>4. Attitude towards work<br>5. Creativity, innovation and resourcefulness<br>6. Independence and self-efficacy<br>7. Communication and negotiation skills |
| **MODERATELY IMPORTANT COMPETENCIES IN THE FUTURE (RANKING POSITIONS: 8-14)** | 8. Communication and negotiation skills<br>9. Methods of data analysis<br>10. Attention to results<br>11. Creativity, innovation and resourcefulness<br>12. Knowledge of foreign languages<br>13. Coping with stress and working under pressure<br>14. Independence and self-efficacy | 8. Organisational skills<br>9. Coping with stress and working under pressure<br>10. Relationship building and cooperation<br>11. Searching for and processing information<br>12. Knowledge of foreign languages<br>13. Self-presentation<br>14. Knowledge of MS Office |
| **THE LEAST IMPORTANT COMPETENCIES IN THE FUTURE (RANKING POSITIONS: 15-21)** | 15. Database searching<br>16. Professional competencies – theoretical knowledge<br>17. Sensitivity to key social issues<br>18. Self-presentation<br>19. Relationship building and cooperation<br>20. Big data<br>21. Knowledge of MS Office | 15. Working in a diverse team<br>16. Professional competencies – theoretical knowledge<br>17. Methods of data analysis<br>18. Leadership skills<br>19. Sensitivity to key social issues<br>20. Database searching<br>21. Big data |

Source:   own study.

## SUMMARY

/ The survey conducted among Polish and Finnish employers revealed certain patterns:

- all the analysed competencies are important for employers – the mean score was always higher than the middle point of the scale,

- there is a variation in the mean score, but it does not exceed 1/5 of the scale range,

- Polish employers evaluated the importance of competencies higher than the Finnish ones,

- the rankings of competency importance made for Finland and Poland are characterised by a high degree of consistency. Nevertheless, there are some major differences, e.g. with regard to leadership skills,

- Polish respondents expect a greater increase in the importance of competencies in the future, i.e. in 2030,

- the rankings of competency importance now and in the future for each country show a very high level of consistency, which means that employers in both countries expect that the skills that are very useful now will be valued the most in 2030,

- there are certain competencies that are at the top of the rankings in both countries for both the present and the future, namely professional competencies (practical skills), attitude towards work, adaptation to change and willingness to develop,

- there are certain competencies that are among the least desirable in both countries for the present and the future, namely professional competencies (theoretical knowledge), sensitivity to key social issues, database searching and big data.

# 6. IT TRAINING FOR THE ENTERPRISE SECTOR – IDEAS, MATERIALS AND SELECTED AREAS

## IDEA AND ORGANISATIONAL ASSUMPTIONS

/ Training courses developed as part of the project are based on the methodology of simulation pedagogy, combining teaching methods, simulation techniques and indicators for assessing learning outcomes in an appropriate manner. For each of those training courses, a lesson scenario was prepared, including a case study dedicated to a specific subject, which allows participants to familiarise themselves with the tools or technologies needed in their workplace. During workshops it is assumed that, according to simulation pedagogy principles, participants identify problems and issues on their own (their own problems/issues, specific and work-related and e.g. the need to automate processes) under the watchful eye of the trainer. Such an approach is particularly important when teaching mature people with practical experience and functioning in a specific professional environment. Examples discussed in class are largely based on the experience of participants, forcing them to notice problems and find solutions on their own. The key thing is to show examples that will make them aware of the fact that by attending a particular training course their work will become more efficient, tasks will be completed faster and processes/data will be safer. Therefore, trainers use specific examples during workshops, including situations that SME employees may encounter on a daily basis, and also give more examples showing how to apply the acquired knowledge and skills. It is possible to base on the experience of people taking part in the training by, for example, arranging a question and answer session and an introductory discussion where training participants identify problems and issues they encounter, and finally – a concluding discussion, during which participants evaluate the possibilities of putting their knowledge and skills into practice. After the simulation of solving a specific problem comes to an end, the trainer conducts a debriefing – a session during which individual participants and the whole group/team express their reflections.

/ The prepared case studies allow participants not only to acquire specific knowledge and IT skills, but also to shape (if possible) other competencies that are valued in them. These include analytical thinking, problem-solving skills, abstract thinking skills, interdisciplinary work or decision-making.

/ Training in one specific topic consists of 8 lessons. According to the employers' suggestions (the results of primary research), it is advisable to organise short training forms, e.g. one-day workshops. This idea was taken into account when arranging courses within the project. However, these plans

were adopted before the pandemic and assumed that training would be delivered in a traditional format. Using this format, an eight-hour course with appropriately scheduled activities and breaks is not a problem. Unfortunately, the remote form of workshops that was imposed by the pandemic situation made it necessary to reorganise the classes due to very limited possibilities for participants to focus and achieve the expected learning outcomes during the 8-hour training course organised on a specific day. Additionally, the participants were less involved in the introductory session (a question and answer session and introductory discussion) than normally, which made it difficult to refer to their experience and thus make them more interested in the class and motivated to participate in it. Moreover, according to what was reported during the debriefing session, they were tired after spending 8 hours in front of the computer and, what follows, less active and creative (in terms of applying learning outcomes in their work). Hence, breaking the case study into two meetings of four lessons each was adopted as an alternative solution to the remote classes.

## PREPARED MATERIALS

/   The basic materials for each training course were prepared according to the standardised formats developed as part of the project. These include:

1. syllabus
2. case study
3. presentation introducing the issues of the workshop/case study to training participants.

/   In addition, trainers running workshops developed materials for participants which contain the necessary elements for effective implementation of the activities and achievement of the learning outcomes. These materials include, for example, a description of the problem, a description of the task, diagrams, brief explanatory information or website addresses with additional information on more advanced methods than those included in the scope of the training.

/   The trainers also created introductory questions on expectations concerning a given topic that are asked at the recruitment stage and make it easier for them to prepare for the class in terms of the content/examples and adjusting them to the needs of a specific participant.

### AD. 1.  SYLLABUS

/   Each of the proposed training courses is described in a syllabus prepared in accordance with the guidelines for the European Qualifications Framework and the National Qualifications Framework. The syllabus includes the following information:

- learning objectives,
- the expected learning outcomes in the areas of knowledge, skills and attitudes,
- the subject matter of the training course,
- the form of learning activities,
- the necessary resources supporting the implementation of the course (software, equipment, teaching aids),
- the ways of verifying the achieved learning outcomes.

/   A brief description of the training course is also provided, including information on the objectives, expected outcomes and profile of potential participants, the key concepts that will be discussed and

introduced during the workshop, and the issues that will be practically implemented during classes. Below you will find a sample syllabus. A sample syllabus dedicated to training in remote communication and its use in the company:

**SYLLABUS**

| TITLE: **REMOTE COMMUNICATION** | |
|---|---|
| **LEARNING OBJECTIVES:**<br>**(O1)** – Passing on knowledge and skills connected with capabilities and functions of remote communication software.<br>**(O2)** – Indicating areas of practical use of remote communication software in an enterprise. | |
| **LEARNING OUTCOMES** | **KNOWLEDGE**<br>A PARTICIPANT...<br>**(K1)**　possesses knowledge about the functions and applications of remote communication software in the enterprise.<br><br>**SKILLS**<br>A PARTICIPANT...<br>**(S1)**　is able to use remote communication software to carry out tasks efficiently over the Internet, cooperate in fully or partially dispersed teams and communicate with customers and external contractors.<br><br>**COMPETENCIES**<br>A PARTICIPANT...<br>**(C1)**　is aware of the role and importance of remote communication in enterprises in contemporary economic realities. |
| **Number of hours (lessons):** 8 | |
| **Topics** (issues covered)<br>　1.　Configuration of remote communication software (Zoom, Teams, Skype).<br>　2.　Scheduling remote meetings using calendars.<br>　3.　Creating and managing a remote team.<br>　4.　Ways of inviting participants to remote meetings.<br>　5.　Ways of joining remote meetings.<br>　6.　Starting and running video conferences.<br>　7.　Sharing screen and online materials.<br>　8.　Communication via chat.<br>　9.　Recording video conferences for archiving. | |
| **Form of course/classes** (including teaching methods and tools) | |
| Workshops conducted using the methods of simulation pedagogy.<br>Methods and tools: a multimedia presentation, computer laboratories, group work, solving and discussing problems raised by participants on an ongoing basis. | |
| **Essential software, hardware and teaching aids** | |
| Zoom, Microsoft Teams and Skype can be downloaded from the Internet. | |
| **Verification of learning outcomes** (methods, tools) | |
| A control task<br>Participation in class | |
| **Author(s) of the syllabus** | XXX |

## A BRIEF TRAINING DESCRIPTION

/  The training course is dedicated to non-technical staff with basic skills in the use of software to communicate via the Internet. It is for people employed in SMEs of a service profile in departments such as accounting, human resources, marketing, customer service, logistics, secretarial and other.

/  The aim of the training is to familiarise participants with the capabilities of market-leading remote communication applications such as Zoom, Microsoft Teams and Skype. During the training, participants will learn and practice the most useful functions of the above-mentioned software, which will allow them to use these applications to perform specific tasks over the Internet, as well as to communicate and cooperate efficiently with other company employees, customers and external contractors. In relation to this, participants will learn how to plan and conduct online video conferences, create dispersed teams, share files, communicate via chat, record meetings, manage meeting participants, etc.
It is expected that participants acquire very useful skills connected with remote work, which are particularly important in today's economic realities.

### KEY TERMS

- Communication via the Internet
- Video conferences
- Planning remote meetings
- Organising a remote team
- Participation in remote meetings
- Managing participants of remote meeting

### KEY ISSUES

- Configuration of remote communication software (Zoom, Teams, Skype).
- Scheduling remote meetings using calendars
- Ways of inviting participants to remote meetings.
- Ways of joining remote meetings
- Starting and running video conferences
- Communication via chat
- Creating and managing a remote team
- Sharing screen and online materials
- Recording video conferences for archiving
- Integration of remote communication programmes with external devices

## AD. 2.  CASE STUDY

/  The preparation of the case study required the development of a concept/idea; reference to real-life problem situations that workshop participants may have encountered (presenting a problem/challenge); the development of a path of action in accordance with the principles of simulation pedagogy (a lesson scenario, including case description, proposed course of the workshop, tasks to be performed, questions/issues for discussion); the preparation of tasks/exercises for participants in a form that stimulates independent or group problem solving – learning by doing (including exercise files). Each case study also includes tools for assessing the acquired skills.

/  According to the prepared formats and developed materials, the course of classes is the following:
- A presentation making participants familiar with workshop issues/case study, their objectives, expected learning outcomes, opportunities for use in practice; reference to the needs

of specific participants; expected outcomes, specific needs and possibilities of meeting them within the workshop topic.

- A question and answer session to identify problem issues by participants and also their own experiences; challenges they seek solutions for; new areas they want/need to learn about; looking for answers to questions about how to improve one's own work in the context of tasks performed in the workplace.

- A presentation of a sample problem/issue/challenge based on one of the possible situations occurring in the practical functioning of a service SME or its service department, for which a case study is prepared. Moreover, it is possible to discuss other situations that are important from the point of view of employees from different departments, where the same solutions might be helpful (they make the work easier, they automate it, increase its quality and shorten its duration – even assuming that work input will be needed at the beginning).

- Performing a case study – active participation, individual work, group work, discussion and exchange of opinions; paying attention to one's own problems and the value of being able to exchange information and experiences.

- Debriefing – a concluding discussion, reflections of workshop participants on the activities, their cooperation, the possibility of using the learning outcomes in their current job and assessing how helpful they will be or how they will influence the overall development and familiarisation with the new area due to personal interest in a given training topic or plans to change a position/job.

- The assessment of the skills acquired by participants – carried out in different forms in the last part of the training course as, e.g. working out a solution to a given problem issue; working out a solution to a task related to the person's professional responsibilities; mini-projects for small groups (e.g. done in pairs).

### AD. 3.  A PRESENTATION FAMILIARISING PARTICIPANT WITH THE ISSUES OF THE WORKSHOP/CASE STUDY

/   The presentations were prepared as a theoretical introduction to the training topic. Attention was also paid to the possibilities of practical application of knowledge and skills from a given training area in participants' professional work. The time allowed for the introduction should not exceed 30 minutes.

### SELECTED TRAINING AREAS

/   Within the project, 10 case studies were planned to develop. The analysis of interest in different areas on the part of employees and employers, as well as information from secondary sources, made it possible to define training topics. According to research findings, the most important for SME employees are the skills connected with using commonly available technologies, software and tools that do not require a large financial investment (e.g. using a spreadsheet, looking for information on the Internet or setting up hardware). Another important issue is remote communication. In most cases, SMEs do not have dedicated service teams responsible for dealing with IT issues, so having employees with knowledge and competency in data or Internet security is crucial to the operation of the company. Given the rapidly growing amount of data, the need to analyse it and make conclusions, it is worth equipping SME

employees with the competency to use databases and work with large data sets. Trends noticed on the market in terms of introducing new products and testing them before starting the production line point to the enormous opportunities offered by the use of 3D printing. Therefore, the training topics recommended and adopted within the project in alphabetical order include the following:

| NO. | TOPICS |
| --- | --- |
| 1. | Data analysis using spreadsheets |
| 2. | Data security |
| 3. | Internet security |
| 4. | Big data |
| 5. | Effective information search |
| 6. | Remote communication |
| 7. | Hardware configuration and the use of 3D printers |
| 8. | Facilitating office work with the use of IT tools |
| 9. | Use of databases and SQL |
| 10. | Advanced data analysis with elements of forecasting |

/   The scope of training courses – a brief overview:



**DATA ANALYSIS
USING SPREADSHEETS**

/   The aim of the training is to recall and improve basic skills in using spreadsheets as well as to pass on and revise the knowledge of data analysis with the use of such spreadsheets. Visualisation of results in the form of graphs and conditional formatting will be very useful in this regard.

/   The training course combines expertise with practical examples of its use in the work environment using the methodology of simulation pedagogy. Assignments and tasks are structured in a way that supports the consolidation of acquired knowledge, as well as the future creative use of this knowledge in the further development of Microsoft Excel skills.

/   Workshop participants will be able to improve their skills in the use of spreadsheets and, in particular, acquire knowledge and skills in fast, efficient and multidimensional data analysis.



**DATA
SECURITY**

/   During the workshop, participants discuss issues connected with securing data stored in files against unauthorised access, backing up data to external hard drives and the cloud, and managing passwords.

/   The training course is dedicated to all employees using computer systems, with particular emphasis on the representatives of smaller companies in which data security is not ensured by any specialist teams, as well as employees who prepare documents, spreadsheets, presentations, etc. outside the company's main IT systems (e.g. in MS Office or graphic design software).

/ During the workshop, participants acquire skills in creating data backup in the cloud and restoring data from a backup copy, encrypting files on a flash drive and password management (what to do in order to avoid writing down passwords on pieces of paper and using the same password for all accounts).

### INTERNET SECURITY

/ This training course is particularly aimed at non-technical staff and focuses on improving their awareness of IT security and the ability to respond to threats encountered on the Internet.

/ The aim of the training is to introduce participants to the most common threats related to Internet use and ways of avoiding them, ways of protecting valuable information from disclosure and misuse, as well as to improve their knowledge of information security.

/ As a result of the training course, participants will be able to recognise the most common threats and forms of risks to information security, as well as to identify socio-technical attacks. What is more, they will acquire the knowledge concerning security principles and appropriate behaviour when using computers while accessing Internet services.

### BIG DATA

/ During the workshop, participants will learn about the basic concepts and problems of Big Data (e.g. regression or classification) and the ways and methods of solving them. Further steps will introduce artificial intelligence algorithms used to analyse large data sets. These skills are very useful for employees working in risk analysis, sales analysis, procurement and marketing departments.

/ Attention will be paid to the proper selection of methods for analysing large sets of data depending on the class of the problem, including the amount of data to be analysed/considered, their nature (e.g. quantitative, qualitative, continuous, discrete), and the problem to be solved.

/ An important aspect of the workshop will be the development of the ability to interpret the results appropriately in order to make accurate and effective decisions. In this respect, the results of using artificial neural networks will also be analysed and evaluated.

### EFFECTIVE INFORMATION SEARCH

/ Available and free Internet resources should enable SME employees to obtain information about the market space in which they work and function. Searching for content on the Internet is now a common activity, repeatedly done throughout the day. However, this does not mean that Internet users are able to use search engine tools and their capabilities in an effective way.

/ The workshop is aimed at people who use Internet resources in their daily work and who are interested in searching for information on the Internet. Its aim is to provide participants with relevant information

competencies, such as recognising information needs, developing a proper search strategy, building search queries and using appropriate search tools to obtain the information needed.

/    The acquired competencies may be used to watch the market, industry and competitors. The ability to efficiently and effectively search for information about markets, industries, competition and trends may translate into the improvement of one's own activities or the development of products and services.

## REMOTE COMMUNICATION

/    The aim of the training course is to its familiarise participants with the possibilities of market-leading remote communication software such as Zoom, Microsoft Teams and Skype. During the workshop, participants will learn and use the most helpful functions of the above-mentioned programmes, which will allow them to use these applications to carry out specific tasks via the Internet, as well as to communicate and cooperate efficiently with other company employees, customers and external contractors.

/    Participants will learn how to plan and run meetings in the form of online videoconferencing, create dispersed teams, share files, communicate via chat, record meetings, manage meeting participants, etc.

/    It is expected that participants acquire very useful skills in remote work that are particularly important in today's economic realities.

## HARDWARE CONFIGURATION AND THE USE OF 3D PRINTERS

/    The training course aims to make SME employees familiar with opportunities arising from the use of 3D prototyping methods, including ad hock creation of 3D models for a given problem. This is particularly important when designing new products and services, where the costs associated with 3D prototyping are incomparably lower than the costs of traditional methods.
Moreover, during the training course employees will have an opportunity to learn the basics of configuring hardware and equipment used in the workplace to maximise the benefits of the latest office technologies.

/    The knowledge connected with this topic, somehow perceived as mystical and meant only for IT specialists, can become more available if it is presented in an approachable manner. During the workshop, basic information about the configuration and use of advanced hardware solutions in the office will be presented without unnecessary technological complexities. The level of detail will be adapted to the needs of participants, given that it should be treated only as potential support in the daily work of the organisation.

## FACILITATING OFFICE WORK WITH THE USE OF IT TOOLS

/    The aim of this training course is to familiarise SME employees with the opportunities arising from the implementation of modern productivity solutions in organisational practice. Although employees' expertise is undoubtedly their advantage, fear of change is their most frequent drawback.

/    During the course, participants will learn about technological solutions, along with typical areas of their application. They will also be given two examples of enterprises that have used modern technologies in different manners.

/    Participants will hear about tools such as online calendar or cloud computing, as well as issues connected with project management, the use of intranet messaging for this purpose and the organisation of the company's information system.

### USE OF DATABASES AND SQL

/    The workshop focuses on the issue of databases which are currently one of the basic data storage structures where facts from the work environment are stored. In order to be able to use the facts (data) stored in a database, one must become familiar with its organisation, the connections between the tables and the SQL language that allows the processed data to be displayed according to the specific needs and preferences of the user.

/    The basic course dedicated to the subject of databases and SQL is recommended for anyone starting to work with databases – analysts, programmers, advanced Excel users, data scientists, database architects and anyone who needs to use external data e.g. to create a report. The knowledge of database technologies and the SQL language is essential in many industries and positions within an organisation.

/    During the workshop, participants will take part in a practical discussion about databases and the use of SQL in data processing with a focus on data usage. They will become familiar with database technologies and ways of building basic and complex queries using various operators, functions and subqueries. Moreover, they will learn to create queries that refer to multiple tables, search for the necessary information and interpret it.

### ADVANCED DATA ANALYSIS
### WITH ELEMENTS OF FORECASTING

/    The training course is supposed to improve the participant's ability to use a spreadsheet to analyse their work and life data. It solves the problem of how to get the data to be analysed into a spreadsheet, how to perform a statistical analysis of the data and how to generate a forecast of future values of a time series in a quick and efficient manner.

/    During the course, participants will learn about the methods of downloading data from different sources into a spreadsheet in a quick manner, ensuring the completeness and correctness of the imported data. Participants will also find out how to quickly perform advanced statistical analyses in MS Excel. Another stage of the course will involve creating forecasts of future values (e.g. sales volume, sales values, revenues, etc.) in MS Excel. The proposed ready-made solutions, their advantages and disadvantages, and the possibilities of using the results in practice will also be presented.

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