

# **6** Upskilling, reskilling and finding talent: The role of SME ecosystems

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Against the backdrop of international shocks, this chapter propose a narrative concerning the skills needs of SMEs that does not focus on technical competencies but rather on bundles of transversal skills, related to the way in which SMEs and entrepreneurs develop their business, cope with digital innovations and connect to partners and customers. These bundles of skills encompass “capabilities”: entrepreneurial competencies that affect resilience and competitiveness of SMEs and entrepreneurs. The chapter also discusses the limitations for SMEs and entrepreneurs to internalise all the skills they need and argues that they can leverage their “ecosystem”. There are international examples of policies that provide SMEs and entrepreneurs with training opportunities and connections to improve their transversal skills. Several of these policy actions have an explicit spatial dimension, as they accompany SMEs and entrepreneurs, locally. However, often these policies are small in scale, or disconnected from other policy agendas

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# In Brief

- Skills are especially relevant for the competitiveness and resilience of small- and medium-sized enterprises (SMEs), which, compared to larger organisations, typically have a more limited ability to leverage other sources of capital and productivity. Access to skills is also critical for SMEs to adapt to rapid changes in economies, whereby value creation increasingly hinges on human capital and intangible assets.
- The green and digital transitions are changing skills demand for a broad range of jobs throughout the economy, with different challenges and opportunities within countries. The increasing demand for technical skills is paralleled by the need for broader “skills bundles”, which encompass “transversal skills” that are of use in a wide variety of situations and work settings. These include cognitive skills such as digital, financial and management competencies as well as soft skills related to behavioural aspects and entrepreneurial mindsets, such as the capacity to work in a team, active learning, tolerance to uncertainty, flexibility and accountability.
- Against the background of tight labour markets and pressures to adapt to the digital and green transitions, skill gaps and shortages have become widespread. These trends amplify the challenges faced by SMEs in accessing and developing talent. SMEs typically have limited connections to networks that may give access to qualified workers and lack formalised human resource management strategies to identify skills gaps and retain trained and skilled staff. In addition, SMEs may not be able to use the numerous financial incentives available to cover training costs, either because they are not aware of these schemes, or because they do not meet eligibility criteria.
- To be able to cope with systemic change and leverage new opportunities, SMEs need to overcome the longstanding challenges to acquire or develop a broader set of skills, bundles of competencies that can help them improve reactivity to novelty and emerging opportunities.
- Across countries, skills policies deployed to support businesses are often generic in nature. For example, skill policies remain largely focused on place-neutral support for higher education and vocational training. At the same time, innovative approaches and good practices are emerging, which propose a focus on tailored policy strategies and programmes that target both supply and demand of skills in SMEs, leveraging or strengthening skills ecosystems, and often delivered with spatial lenses.
- Skills ecosystems offer SMEs channels to access bundles of skills, including transversal ones, without the need of internalising them and fully bearing the related costs. Rather, skills can be accessed through the specialised labour pool or in the form of knowledge services. The abundance of these “positive externalities” can enable SMEs to tap more easily into relevant expertise and respond to the need for “non-core” skills in a sustainable manner. The effectiveness of these policies largely depends on their complementarities with other policy agendas, such as those related to regional development, innovation and sustainability.

## SME skills needs are evolving rapidly due to the digital and green transition

### ***Skills are key to SME competitiveness and resilience***

Accessing, developing and using skills effectively is crucial for businesses to thrive in fast-changing economies, which are increasingly based on the production and use of information, knowledge, data and technologies. In the knowledge-based, globally connected and increasingly digitalised economy, value creation strongly hinges on human capital and intangible assets. Skilled workers and access to specialised expertise represent a key driver of firm competitiveness and productivity growth (OECD, 2019<sup>[1]</sup>; Marchese et al., 2019<sup>[2]</sup>).

Skills are especially relevant for the competitiveness and resilience of SMEs, which, compared to larger organisations, typically have a more limited ability to leverage other sources of capital and productivity. Access to skills is also critical for SMEs to adapt to rapidly changing business and technology environments. Research shows that skills upgrading represents a key competitive strategy adopted by small businesses to scale up innovative efforts, adjust to rising competition or grow by accessing new markets, whether through developing new product niches or entering new geographical destinations (Jansen and Lanz, 2013<sup>[3]</sup>; Brambilla, Lederman and Porto, 2012<sup>[4]</sup>; Love and Roper, 2015<sup>[5]</sup>).

### ***Skills needs are evolving rapidly, with the increasing prominence of “transversal skills”***

The transition to a green and digital economy and the rapid changes in the trade environment and configuration of local and global value chains, are profoundly impacting the skills needs of businesses and entrepreneurs. The increasing demand for technical skills is paralleled by the need of developing broader “skills bundles”. As adopting data-intensive technologies requires complementary investments in human capital, alongside the technical skills required to perform specific jobs and tasks, these bundles need to encompass “transversal skills”, that is to say, skills that are not specifically related to a particular job, task, academic discipline or area of knowledge but can be used in a wide variety of situations and work settings (UNESCO, 2015<sup>[6]</sup>) (OECD, 2021<sup>[7]</sup>).

Transversal skills include cognitive skills such as digital, financial and management competencies as well as soft skills, which are more related to behavioural aspects such as the capacity to work in a team, tolerance to uncertainty and accountability. These soft skills are at least as important as cognitive skills for individual development and labour market success (Brunello and Schlotter, 2011<sup>[8]</sup>) and represent key features of entrepreneurial mindsets (Box 6.1).

Recent employee surveys highlight the importance of these “skills bundles” to thrive in the digital and green economy in the coming years. For instance, the World Economic Forum (WEF) Future of Jobs Survey 2020 found that critical thinking and analysis, as well as problem solving, were the most sought-after skills across sectors. Furthermore, in the aftermath of the COVID-19 pandemic, skills in self-management, such as active learning, resilience, stress tolerance and flexibility, have increased in importance in skills demand (Figure 6.1) (WEF, 2020<sup>[9]</sup>).

#### **Box 6.1. Defining the entrepreneurial mindset**

Learning new skills is essential to cope with transformation but it is not enough. Entrepreneurs and employees must also be motivated to use their skills to create new opportunities. They need an entrepreneurial mindset, where “mindset” is intended as a way of thinking and orienting to the world that shapes how individuals perceive, feel and act (Neeley and Leonardi, 2022<sup>[10]</sup>). In a highly volatile setting, in which innovation is the main driver to increase productivity, entrepreneurship is increasingly

viewed as an important characteristic of individuals because it provides them with the capacity to transform ideas into new and sustainable processes, products and services.

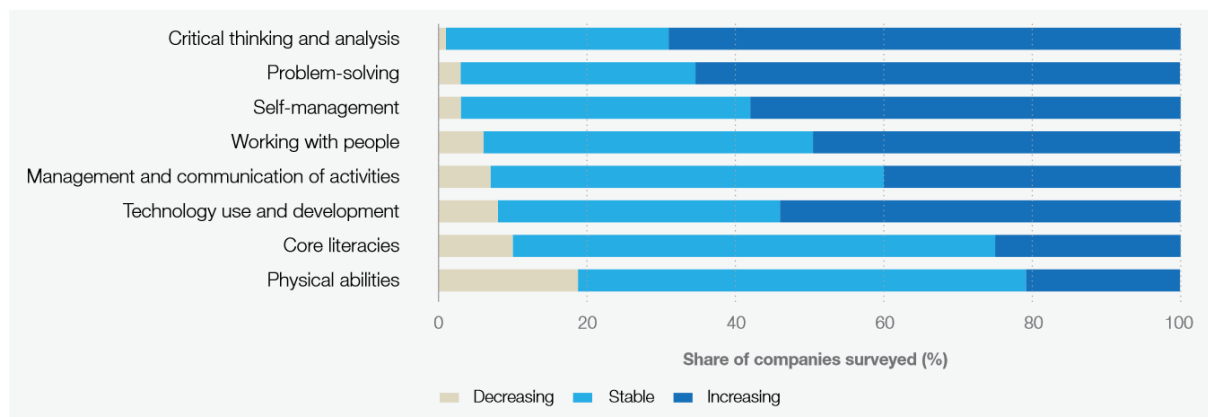
Entrepreneurship, also embodying intrapreneurship when individuals operate in an organisation that they did not create or own, provides individuals with a capacity to identify and solve problems, have more tolerance to uncertainty, mobilise resources and manage creation and value realisation processes (OECD, 2023<sup>[11]</sup>). Many of these aptitudes can be linked to cognitive competencies such as logic and reasoning and memorisation of information and procedural experience. However, there are a number of wider non-cognitive characteristics that can enhance value-creating endeavours. Acquiring such skills can be beneficial to all individuals and in particular to entrepreneurs and SMEs, regardless of their sectoral specialisation.

Importantly, the entrepreneurial mindset can be learned and taught. While not all non-cognitive skills are entrepreneurial in nature, entrepreneurship-focused education can support the development of non-cognitive skills. In particular, the entrepreneurial mindset as described above can be developed through the application and experimentation of entrepreneurship pedagogies and practices and non-formal learning provisions (OECD/EU, 2018<sup>[12]</sup>).

Source: Neeley, T. and P. Leonardi (2022<sup>[10]</sup>), "Developing a digital mindset. How to lead your organization into the age of data, algorithms, and AI", <https://hbr.org/2022/05/developing-a-digital-mindset>; OECD (2023<sup>[11]</sup>), *The Geography of Higher Education in Québec, Canada*, OECD Publishing, Paris; OECD/EU (2018<sup>[12]</sup>), *Supporting Entrepreneurship and Innovation in Higher Education in The Netherlands*, <https://doi.org/10.1787/9789264292048-en>.

## Figure 6.1. Employers increasingly seek critical thinking and analysis, problem-solving and self-management skills

Perceived skills and skills groups with growing demand by 2025, by share of companies surveyed



Note: The 2020 OECD-World Bank-Meta Future of Business Survey was administered in the first half of 2020. The final respondent sample is composed of multinational (65%) and national companies (35%) with at least 100 employees. It includes responses from chief executive officers (12%), top executives (59%), middle-level executives (25%) and other respondents such as consultants (3%).

Source: Based on WEF (2020<sup>[9]</sup>), *The Future of Jobs Report 2020*, [https://www3.weforum.org/docs/WEF\\_Future\\_of\\_Jobs\\_2020.pdf](https://www3.weforum.org/docs/WEF_Future_of_Jobs_2020.pdf).

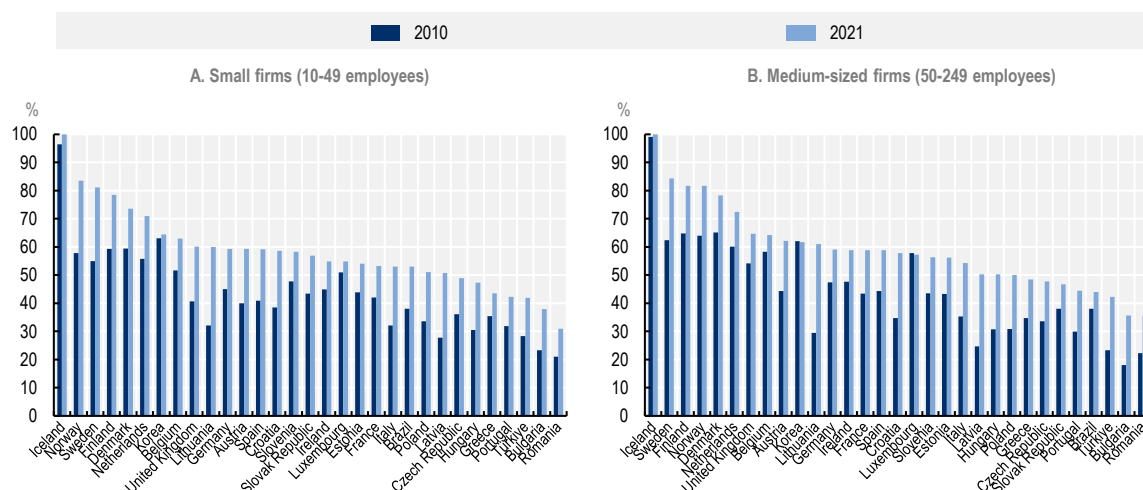
### ***The accelerated digitalisation of economies and the pressure for achieving sustainability are the main drivers of changing skill needs***

Beyond particular sectors and occupations that develop and provide digital goods and services, digital skills are becoming a transversal requirement, across sectors, occupations and firm sizes (Cedefop,

2021<sub>[13]</sub>). This includes SMEs, where the use of digital tools by employees has increased significantly over the past decade, concerning a majority of jobs, although cross-country differences remain (Figure 6.2). For instance, over 2010-21, across OECD economies, the share of employees using a computer with Internet access at work increased on average from 43% to 58% in small firms, and from 45% to 59% in medium-sized companies.


**Figure 6.2. SME employees are increasingly using digital tools**

Persons employed using a computer with Internet access



Note: Data for Austria, Iceland, Korea and UK refer to 2020; data for Brazil refer to 2019.

Source: Based on OECD.Stat (n.d.<sub>[14]</sub>), *ICT Access and Usage by Businesses* (database), [https://stats.oecd.org/OECDStat\\_Metadata/ShowMetadata.ashx?Dataset=ICT\\_BUS&ShowOnWeb=true&Lang=en](https://stats.oecd.org/OECDStat_Metadata/ShowMetadata.ashx?Dataset=ICT_BUS&ShowOnWeb=true&Lang=en).

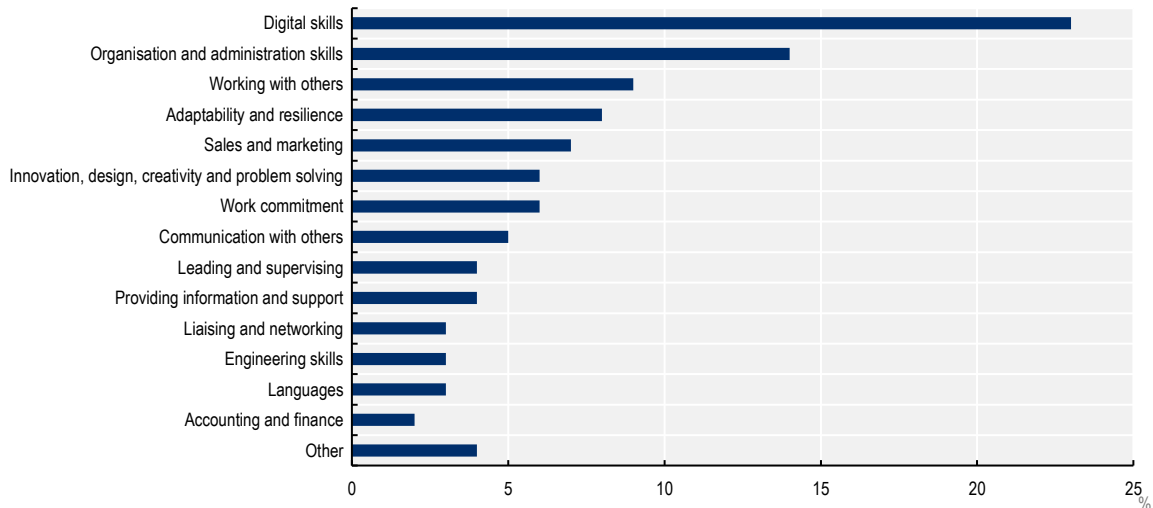
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The demand for digital skills further accelerated with the COVID-19 pandemic. As remote work, driven by necessity, took off with businesses across sectors, the effective use of digital skills proved to be a critical component of resilience. Analysis of the skills demand composition of online job advertisements posted in 2020 in Europe shows that the digital skills cluster recorded the most pronounced shift compared to 2019, growing from 20% to 23% of total skill demand (Figure 6.3.) (Cedefop, 2020<sub>[15]</sub>).

Emerging digital technologies exacerbate the need for skills bundles integrating technical and transversal skills (Box 6.2). As a case in point, OECD analysis of the skills bundles demanded in artificial intelligence (AI)-related job postings shows that, in addition to technical skills in the digital area (e.g. skills related to open-source programming, management of big data and data analysis, machine learning and robotics), there is a growing demand for transversal skills including written communication, problem-solving skills, teamwork skills and creativity. In particular, over the past decade, communication skills have gained relative importance, reflecting the need for effective communication within teams involved in the development and adoption of AI, as well as among the different parts of the firm or institution developing or adopting AI, for AI to be correctly deployed (Samek, Squicciarini and Cammeraat, 2021<sub>[16]</sub>).

### Figure 6.3. Demand for digital skills accelerated with the COVID-19 pandemic

Share of broad skill areas on total skill demand in online job advertisements, EU, 2020



Source: Based on Cedefop (2020<sup>[15]</sup>), "Coronavirus and the European job market: How the pandemic is reshaping skills demand", <https://www.cedefop.europa.eu/en/news/coronavirus-and-european-job-market-how-pandemic-reshaping-skills-demand>.

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#### Box 6.2. Emerging digital technologies generate multidimensional skills needs

With accelerated digital transformation, intangible assets have become a more important part of nearly all firms' value, even if not recorded on balance sheets, especially data-driven firms. Indeed, improved access, use and protection of data – in short, improved data governance – is becoming a strategic issue for businesses across all sectors (OECD, 2022<sup>[17]</sup>). Effective data governance demands significant investments in a diverse set of skills, including, among others, technical skills (e.g. database or warehouse design and management, development of cybersecurity frameworks and tools), analytical skills (e.g. interpreting data and generating insights from different data sources), language skills (e.g. creating glossaries) and strategic thinking (e.g. understanding how data can serve the strategic objectives of the firm). Organisational capital and managerial skills also play an important role in improving the adoption of data-related technologies and enabling changes towards data-driven business processes within the firm (Calvino et al., 2022<sup>[18]</sup>).

In fact, the increased demand for digital skills and services relates to specialised, technical skills for the use of specific digital technologies but also importantly to transversal "soft" skills, confirming the need for integrated skills bundles.

"Soft" skills, such as the ability to search and evaluate information, solve unexpected problems, communicate and collaborate effectively and be creative are all instrumental to the successful use of digital technologies within a firm – alongside the entrepreneurial (intrapreneurial) skills needed to make change happen. Furthermore, "critical thinking" and "ability to learn" are key to sustaining the continuous learning process – or lifelong learning – that is essential to keep pace with the evolution of digital tools.

Source: OECD (2022<sup>[17]</sup>), "Financing growth", <https://doi.org/10.1787/6962c7a9-en> (accessed on 11 October 2022); Calvino, F. et al. (2022<sup>[18]</sup>), "Closing the Italian digital gap: The role of skills, intangibles and policies", <https://doi.org/10.1787/e33c281e-en>.

The green transition represents another driver of change in skill needs for many jobs across sectors, as well as creating opportunities for occupations that may not yet exist (OECD, 2023<sup>[19]</sup>). The impact of green transition will of course have a significant impact in sectors such as energy (especially renewables), transport, manufacturing (especially automotive, steel and iron), construction, agriculture and waste management (Cedefop, 2021<sup>[20]</sup>). But nearly all sectors are affected to varying degrees, as businesses need to adjust to the green transition, such as by innovating or adapting products and processes, complying with regulations, addressing supply chain requirements or accessing sustainable finance.

Moreover, the emerging skills requirements do not only concern occupations that explicitly tackle climate change, protect the ecosystem, encourage biodiversity and reduce carbon emissions and the consumption of energy, materials and water. The green transition is expected to lead to a shift in the skills required for a broad range of jobs throughout the economy – from construction to fashion to scientific research (OECD, 2023<sup>[19]</sup>). Already, green skills demand is evolving more broadly across job profiles, including, for instance, aspects related to economics and accounting, design and construction skills, system analysis, health and safety, data management, reporting and engineering, among many others (OECD, 2023<sup>[19]</sup>). For example, analysis based on social media platform LinkedIn data shows that green skills are often required in traditional “non-green” jobs, such as sustainable fashion, fleet management and sales. Over 2016-21, the fastest-growing “greening jobs” (i.e. jobs that typically require some skills that enable the environmental sustainability of economic activities) include roles that are found in a variety of sectors and businesses, such as compliance manager, facilities manager and technical sales representative (LinkedIn, 2022<sup>[21]</sup>). However, those developments and the overall impact of the green transition on skills demand and jobs differ strongly across regions within countries. Therefore, upskilling and retraining policies should be joined up with wider local development efforts to address the specific challenges and opportunities that different regions and communities face (Box 6.3).

### **Box 6.3. The green transition’s implications for local jobs, skills and workers**

While tackling climate change and environmental degradation is one of the most formidable tasks the world faces, a lack of workers with relevant skills could hold back the green transition. This shift to a sustainable and net-zero economy will result in a significant transformation of local labour markets, as workers move into different occupations and sectors, amplifying megatrends such as digitalisation and demographic change that have also been reshaping the geography of jobs and the world of work.

The greening of the labour market has different effects on people, places and firms. New types of jobs will emerge. Some existing jobs, especially in highly polluting activities such as coal and gas extraction, will be lost. Furthermore, the green transition will lead to a shift in the skills required for many other jobs throughout the economy. Since the geography of these transitions will also differ, a place-based strategy will be vital, with local economic development and business support programmes complementing national green transition policies, particularly for SMEs.

#### **Local economies differ in terms of the risk of job loss as well as the opportunities for “green” jobs**

While the green transition is a global megatrend mainly spurred by policy, its labour market impact is inherently local. Both the risks and opportunities for workers are uneven across different places within the same country. Regions relying on high-emission sectors are more likely to see jobs disappear due to green policies. Likewise, economic opportunities and “green” job creation will not materialise equally everywhere. Therefore, aggregate effects or national data can conceal regional disparities in the labour market impact of the green transition.

Around 18% of workers in the OECD have jobs with a significant share of green tasks that directly help improve environmental sustainability or reduce greenhouse gas emissions. However, the share of those

“green-task” jobs differs across regions, ranging from 7% to more than 35%. Some regions, including many capital regions, are at the forefront of the green transition – they already have a high and increasing share of green-task jobs and a low share of “polluting” jobs at risk of disappearing. In other regions, a high share of polluting and green-task jobs coincide, which creates space for job transitions. However, there are also regions with an above-average risk of job displacement that have not yet managed to capture the benefits of the green transition. Overall, few regions with a low share of green-task jobs show signs of catching up.

### **The green transition may deepen divides within local labour markets**

The green transition has a strong gender dimension in the labour market. Women tend to be under-represented in green-task jobs, accounting for only 28% of them, requiring policy efforts to raise female participation in the green transition. On the other hand, men will be the most affected by the disappearance of polluting jobs.

Without the right policy action, the green transition may have other significant distributional effects. Green-task jobs tend to offer up to 20% higher pay than other jobs. While future green jobs might shift towards medium- and low-skilled occupations, in activities such as waste management, retrofitting or construction, so far, high-skilled and educated workers have predominantly captured the employment opportunities brought about by the green transition. In contrast, people with lower educational attainment and in medium-skilled occupations are at higher risk of displacement due to the green transition.

### **Local actions will be essential in creating green jobs and supporting the development of green skills**

Local actors will play an important role in managing the green, and just, transition, alongside national governments. As both the challenges and opportunities of the green transition are place-specific, local actions or national initiatives tailored to local realities are needed, in particular in the areas of employment and skills policies.

Many of the challenges brought about by the green transition can be tackled by adapting and ramping up the existing local labour market and skills systems, others will require tailored policies. Local skills systems are already struggling to keep pace with the rapid change of jobs and skills needs and, often, to reach those individuals that would benefit the most from training. Therefore, governments need to double down on adult learning and active labour market policies informed by skills assessment and anticipation systems in order to equip enough workers with the green skills that are in demand. This requires active engagement from workers, employers and public actors, and targeted measures that address the uneven risk of job losses across regions, industries and individuals.

Source: OECD (2023<sup>[19]</sup>), *Job Creation and Local Economic Development 2023: Bridging the Great Green Divide*, <https://doi.org/10.1787/21db61c1-en>.

In addition, the capacity of businesses to respond to the sustainability imperative depends increasingly on transversal skills. These include environmental awareness and a willingness to learn about sustainable development, systems and risk analysis, skills to identify opportunities and create new strategies to respond to green challenges, as well as soft skills, such as interpersonal competencies (e.g. management skills to facilitate holistic and interdisciplinary approaches that encompass economic, social and environmental objectives, communication and negotiation skills for addressing conflicting interests in complex contexts, marketing skills to promote greener products and services) and intrapersonal competencies (e.g. adaptability to learn and apply new technologies and processes required to green a task or a job, entrepreneurial skills to capture opportunities presented by low-carbon technologies) (Pavlova, 2018<sup>[22]</sup>). Also, skills associated with abstract reasoning and problem solving can drive the



implementation of technological and organisational changes necessary to deal with the opportunities and the challenges of the green transition (Autor, Levy and Murnane, 2003<sup>[23]</sup>), including those triggered by environmental regulation (Vona et al., 2018<sup>[24]</sup>).

## Several short-term and structural factors limit SMEs' access to talent

Against the backdrop of increasing and pressing needs for bundles of transversal skills, SMEs face short- and long-term challenges to access the talent they need to compete and thrive in a digital and greener economy. The way SMEs and entrepreneurs identify and act on rapidly evolving skills needs is key to their successful adaptation to major transformation trends but also to their long-term resilience and competitiveness, capacity to drive change and contribution to societal needs and well-being. The COVID-19 crisis as well as Russia's war of aggression against Ukraine have generated economic and societal shocks that have affected labour markets and, in turn, the ability of SMEs and entrepreneurs to access skills (see Chapter 1). These short-term challenges compound structural challenges that SMEs face when hiring, upskilling or reskilling their workforce.<sup>1</sup>

### ***As labour markets tighten and demand for transversal skills increases, skill gaps and shortages have become widespread and are especially pronounced for SMEs***

Tight labour markets and a shortage of workers have been defining characteristics across most OECD countries in recent years, reflecting, among others, demographic trends (ageing) agglomeration dynamics (concentration of the population in urban and metropolitan areas), and technological change and skills shortages have worsened in the aftermath of the COVID-19 crisis. In 2022, in many industries and countries, the number of firms reporting labour shortages rose significantly above pre-pandemic levels (OECD, 2022<sup>[25]</sup>).

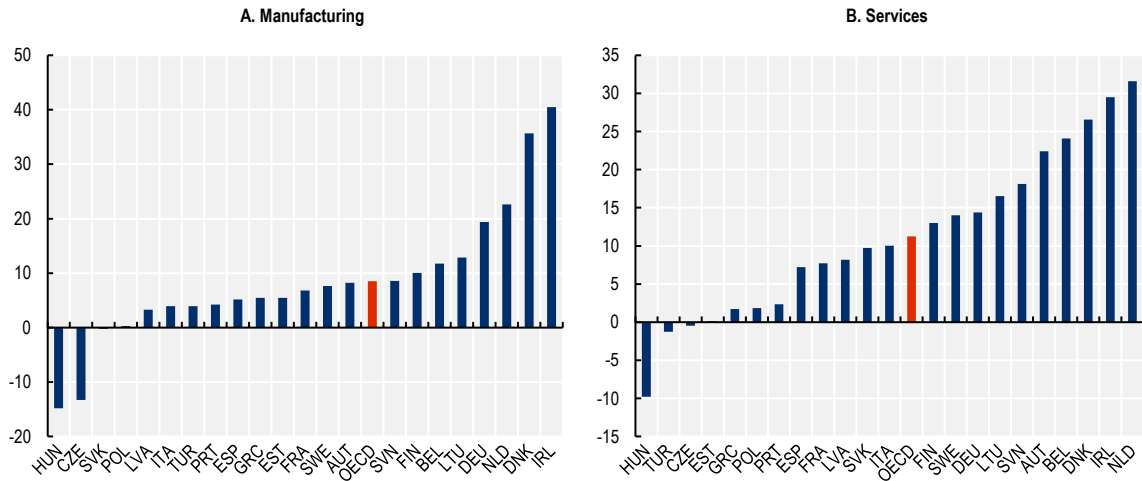
Total employment in the OECD area returned to pre-COVID crisis levels at the end of 2021, continuing to grow in the first half of 2022, before Russia's war of aggression against Ukraine threatened the strength of the recovery. The OECD unemployment rate fell from its peak of 8.8% in April 2020 to 4.9% in July 2022. Driven by the post-pandemic economic rebound and steep increase in labour demand, in the second half of 2021 and early 2022, vacancies surged to record highs in many countries. In July 2022, in the United States, more than 11 million job vacancies were posted, against a pool of less than 6 million unemployed. The number of firms reporting production constraints from labour shortages rose significantly above pre-pandemic levels across European Union (EU) countries and Türkiye, both in services and manufacturing (27.5% of services firms reported shortages, more than 11 percentage points above the pre-crisis level, and 26% of manufacturing firms, 8.5 percentage points higher than before the crisis) (Figure 6.4) (OECD, 2022<sup>[25]</sup>). In Canada, from the first quarter of 2020 to the third quarter of 2022, the proportion of long-term job vacancies rose from 28.5% to 38.4% (Lam, 2022<sup>[26]</sup>).

In some countries, resignations have increased along with labour tightness. While cyclical factors may be at play, the rapid increase in resignations in the aftermath of the pandemic also suggests the crisis may have triggered a change in workers' preferences (Causa et al., 2022<sup>[27]</sup>). In the United States, resignations increased across all sectors, reaching record highs in 2021, but were more pronounced – relative to the sector size – in manufacturing, retail trade and finance and insurance (OECD, 2022<sup>[25]</sup>).

Labour shortages have risen substantially in all sectors, including low-pay sectors, such as accommodation and food, and sectors that were under strain during the pandemic, such as health and care-related activities. Recruiting challenges have also increased in manufacturing and higher-pay industries, including the information and communication sector (ICT), where new demand triggered by accelerated digitalisation has amplified structural gaps (Figure 6.5) (OECD, 2022<sup>[25]</sup>; Causa et al., 2022<sup>[27]</sup>).

### Figure 6.4. Production constraints from labour shortages have become widespread

Differences in the share of firms reporting labour shortages between the second quarters of 2016-19 and Q2 2022



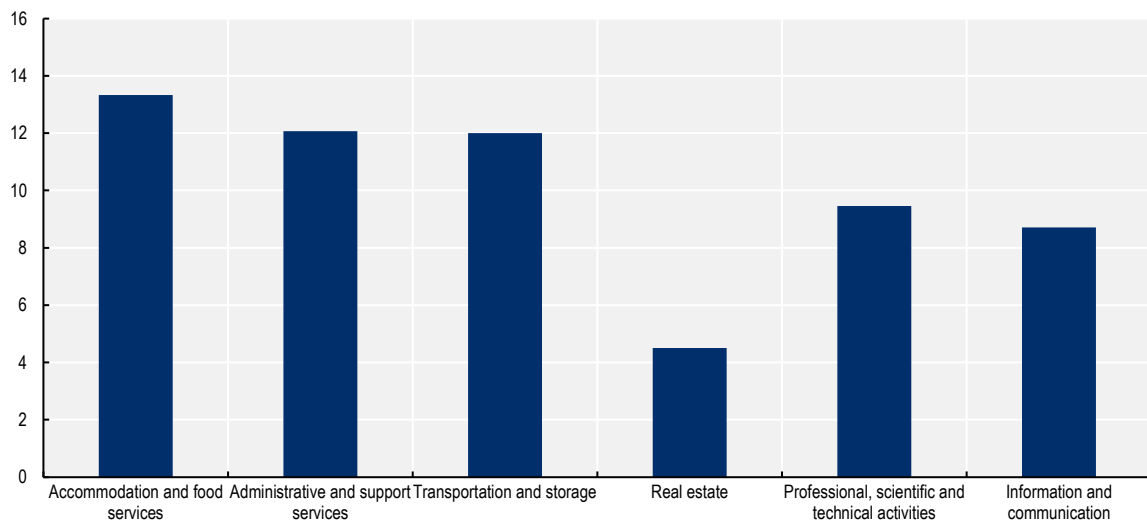
Note: Data in the second quarter of the calendar year are collected in the first two to three weeks of April. Firm responses are seasonally adjusted.

Source: OECD (2022<sup>[25]</sup>), *OECD Employment Outlook 2022: Building Back More Inclusive Labour Markets*, <https://dx.doi.org/10.1787/1bb305a6-en>, based on European Commission Business and Consumer Survey.

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### Figure 6.5. Recruiting challenges are acute in low-pay sectors but also in high-pay services

Percentage changes in the number of firms reporting recruiting challenges by service sector in the 27 EU member states, from Q4 2019 to Q2 2022, seasonally adjusted



Note: Industries are ranked by the median wage in 2019 in the European Structure of Earnings Survey (SES).

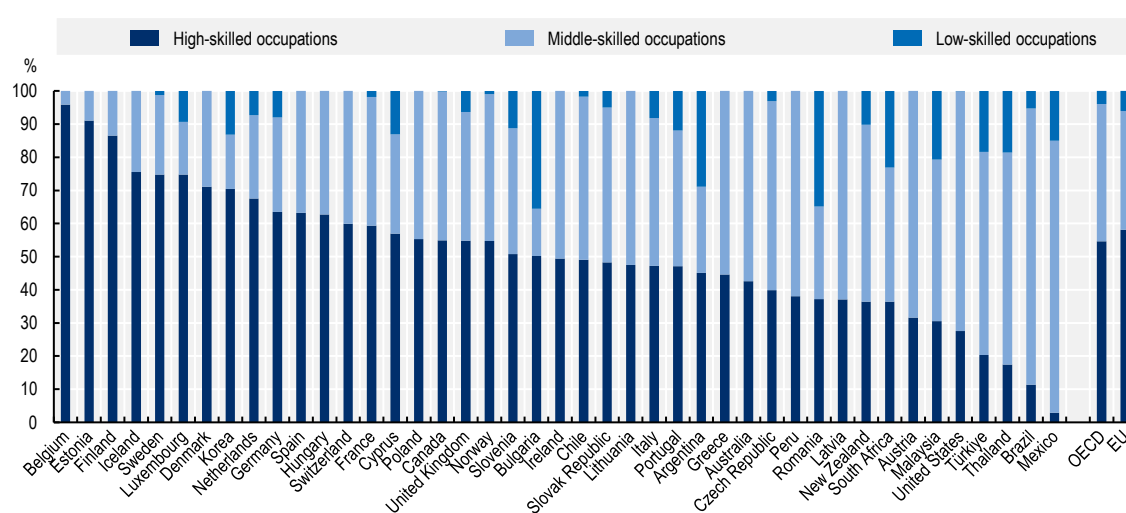
Source: OECD (2022<sup>[25]</sup>), *OECD Employment Outlook 2022: Building Back More Inclusive Labour Markets*, <https://dx.doi.org/10.1787/1bb305a6-en>, based on the Joint Harmonised EU Services (European Commission), Employment by sex, age and detailed economic activity from 2008 onwards, NACE Rev.2 two-digit level (Eurostat).

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The OECD Skills for Jobs database (n.d.<sup>[28]</sup>) 2022 shows that, across countries, on average, more than half of the employment in occupations with labour shortages is highly skilled. These occupations range from managerial positions to highly skilled professionals in healthcare, teaching or ICT. A sizeable share of occupational shortages (41% of total employment in hard-to-fill jobs across OECD countries) is also found in medium-skilled occupations, such as personal service workers or electrical and electronic trades workers (Figure 6.6) (OECD, 2022<sup>[29]</sup>). The analysis of labour shortage trends in Canada in the first quarter of 2022 showed that recruiting skilled employees was expected to be an obstacle over the next three months for 36.9% of all businesses; retaining skilled employees was expected to be an obstacle for 27.6% of all businesses (Statistics Canada, 2022<sup>[30]</sup>). In Italy, the January 2023 monitoring of business recruitment forecasts by Unioncamere highlights that hiring difficulties concern 45.6% of all job postings, 7 percentage points higher than in January 2022. These shares increase to 66% for management profiles and 62% for specialised workers (Unioncamere, 2023<sup>[31]</sup>).

**Figure 6.6. Shortages largely concern highly skilled occupations**

Shortage occupations, by skill-level, 2019



Note: High-, medium- and low-skilled occupations are ISCO occupational groups 1 to 3, 4 to 8 and 9 respectively. Shares of employment in each skill tier are computed as the corresponding employment in each group over the total number of workers in shortage in each country. Data refer to 2019 with the following exceptions: they refer to 2018 for CHE, FRA, IRL, ITA, POL, THA; 2017 for DEU, GBR, KOR; 2016 for AUS; 2015 for BRA, TUR; and 2012 for ISL, SVN.

Source: OECD (2022<sup>[29]</sup>), *Skills for Jobs 2022. Key Insights*, OECD, Paris, [https://www.oecdskillsforjobsdatabase.org/data/S4J2022\\_results.pdf](https://www.oecdskillsforjobsdatabase.org/data/S4J2022_results.pdf), based on the OECD Skills for Jobs database 2022.

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### **Short-term shortages disproportionately impact SMEs and entrepreneurs**

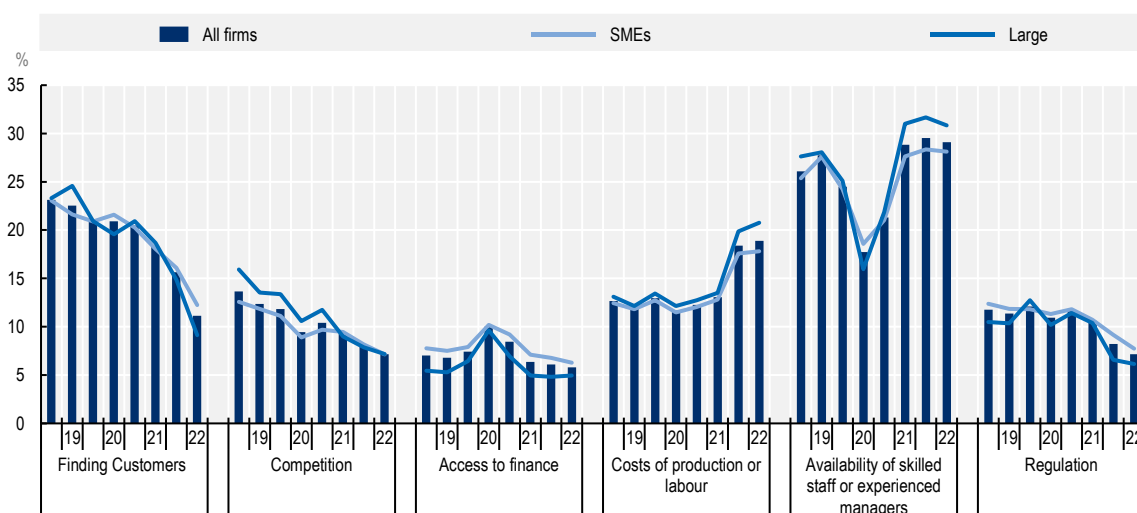
Such broad and sudden skills shortage can place SMEs at a specific disadvantage, as structural challenges to access skills are amplified by strong pressure on labour markets and increased competition for skills to cope with rapid digital transformation, transitions to more sustainable business models, disruptions in supply chains and, more generally, a more uncertain business environment. Skill shortages and recruitment difficulties also impact the well-being and motivations of overburdened employees and entrepreneurs.

Although there are limited data focusing specifically on SMEs, results from the Survey on the Access to Finance of Enterprises (SAFE) by the European Central Bank and the European Commission show that SMEs in the euro area share the same concern as large companies regarding the availability of skilled staff and experienced managers; flagged as the top challenge in April-September 2022 (Figure 6.7) (ECB, 2022<sup>[32]</sup>). In the United Kingdom, more than two-thirds (68%) of SMEs faced skills shortages in 2022, rising to 86% in large organisations (Open University/British Chambers of Commerce, 2022<sup>[33]</sup>). In Germany, around 80% of SMEs are in need of basic digital skills such as the ability to use standard software and digital devices (Arne Leifels, 2020<sup>[34]</sup>).

In the short term, SMEs and entrepreneurs tend to be more exposed to such skills imbalances, compared with large firms, which typically have the capacity to buffer skills shortages for a longer period by reducing slack, re-organising or outsourcing activities (management practices), as well as leveraging longer-term strategies for labour automation. The lack of a talent platform, and their lower attractiveness for skills and specialised workers, make SMEs more vulnerable to short-term skills imbalances, as well as representing a more structural challenge for longer-term transformations.

**Figure 6.7. Lack of skilled labour represents the main challenge for enterprises in the euro area**

Most important problem faced by the enterprise, 2019-2022, share of firms



Source: [27th round of the Survey on the Access to Finance of Enterprises \(SAFE\)](#), European Central Bank and European Commission.

StatLink  <https://stat.link/ikfzc2>

### **Short-term shortage amplify structural challenges SMEs and entrepreneurs face in accessing skills**

SMEs and entrepreneurs have specific features that may impinge upon their capacity to fill skills gaps – especially when related to bundles of transversal skills.

Many SMEs, especially smaller businesses, tend to focus their activities on a specific field or a niche market, and the bulk of their employees are domain specialists, with more generic functions, often, poorly covered. This can hamper horizontal innovation and, in turn, spot new business opportunities and trends outside of their area of specialisation, such as those related to the digital and green transition.

To be able to cope with systemic change and new opportunities, SMEs need to overcome the longstanding challenges they face to acquire or develop a broader set of skills, bundles of competencies that can help them improve reactivity to novelty and emerging opportunities.

To broaden their talent base, besides hiring workers with broader sets of skills, SMEs can upskill and reskill existing employees through training and, in particular for small organisations, access expertise in their ecosystem, in the form of services, information and exchange of formal or tacit knowledge.

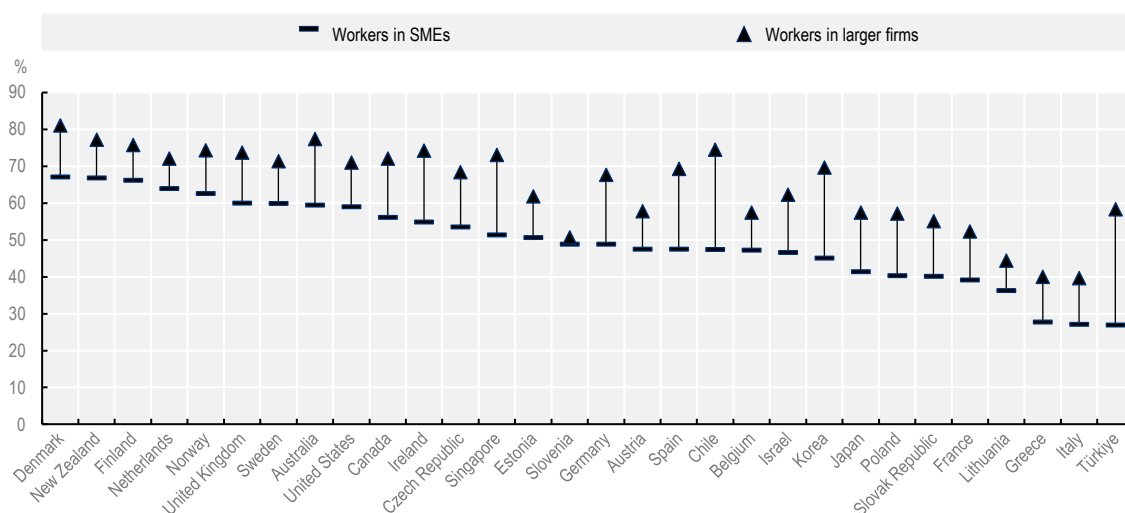
However, a sizeable share of SMEs continue to have limited active engagement in training activities. As shown by the OECD Programme for the International Assessment of Adult Competencies (PIAAC), which measures the cognitive and workplace skills of individuals, workers in SMEs participate less in formal and informal job-related training than workers in large firms, with an average 15 percentage point difference across countries (Figure 6.8) (OECD, 2019<sup>[35]</sup>). In addition, even when SME employees engage in training, the length tends to be shorter than for employees in large firms (OECD, 2020<sup>[36]</sup>).

The relatively fewer training opportunities for employees characterise SMEs at large. Formal training programmes within firms, such as learning circles and job rotation, exchanges or secondments have typically limited participation by SMEs (OECD, 2013<sup>[37]</sup>). The gap in training activities between SMEs and large enterprises is evident also when considering ad hoc on-the-job training, in the form of continuous vocational training (CVT) courses (see Figure 6.9).

SMEs also lag behind large companies in their training investments for the digital economy. In many countries, less than 10% of small firms offer ICT training to their employees, against 40% to 80% of large firms (Figure 6.10).

### Figure 6.8. SME employees are typically less involved in formal and non-formal training activities

Percentage of adults participating in formal and non-formal job-related learning



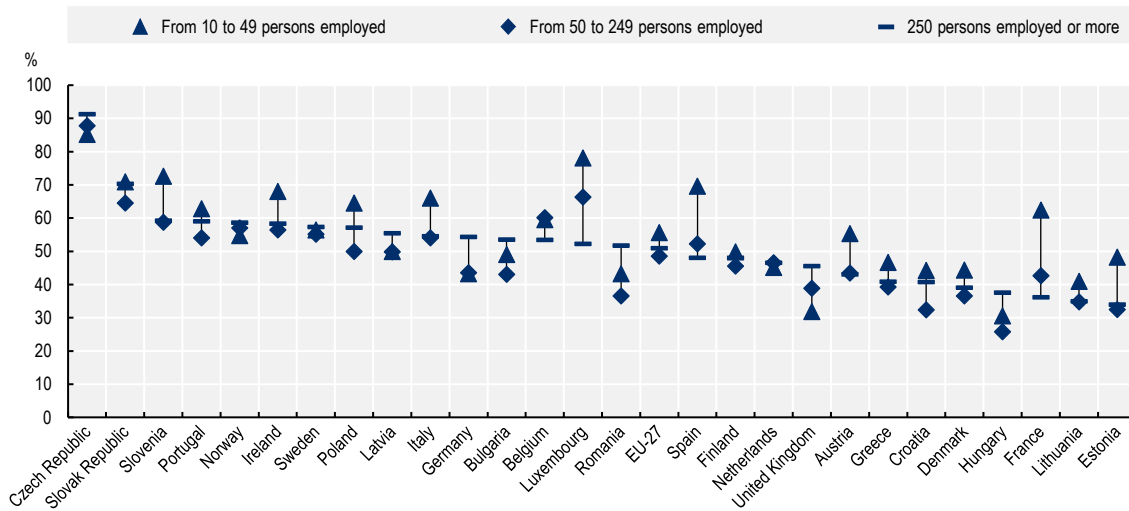
Note: Belgium refers to Flanders only, the United Kingdom to England and Northern Ireland.

Source: OECD (2019<sup>[35]</sup>), *Getting Skills Right: Future-Ready Adult Learning Systems*, <https://doi.org/10.1787/9789264311756-en>, based on PIAAC (2012, 2015).

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**Figure 6.9. SME employees are also less engaged in continuing vocational training**

Percentage of employees that participated in at least one continuing vocational training course, 2015

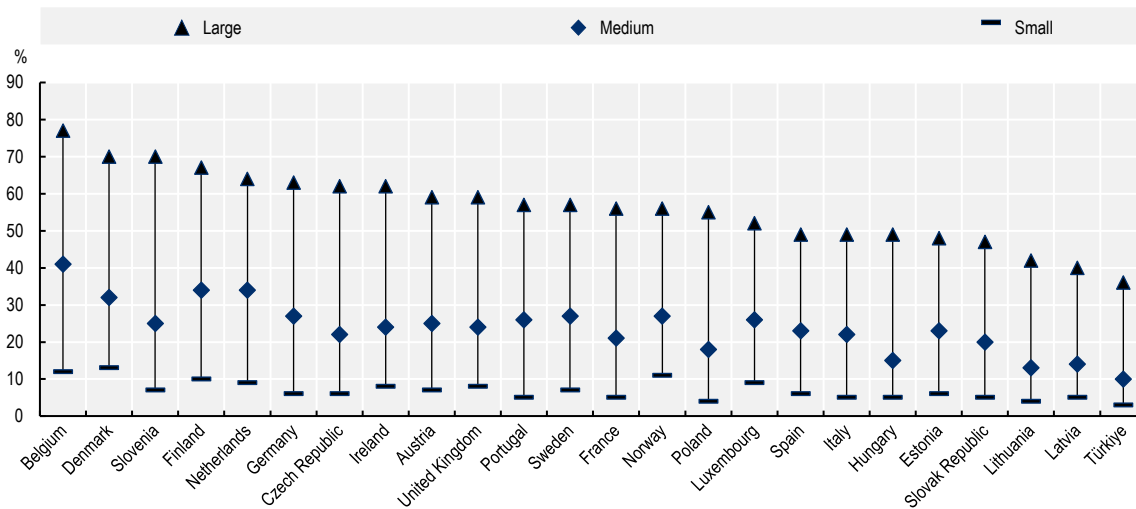


Source: OECD (2021<sup>[38]</sup>), *Training in Enterprises: New Evidence from 100 Case Studies*, <https://doi.org/10.1787/7d63d210-en>.

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**Figure 6.10. Smaller firms offer less ICT training to employees**

Share of firms providing training to develop/upgrade ICT skills of their personnel, 2020



Note: The figure does not include micro enterprises, i.e. companies with 1-9 employees.

Source: Eurostat (2022<sup>[39]</sup>), *Digital Economy and Society (database)*, <https://ec.europa.eu/eurostat/web/digital-economy-and-society/data/database>.

StatLink  <https://stat.link/pkzb51>

The fact that SMEs, despite their multidimensional need for skills, do not engage in training may depend on different factors, including the capacity of entrepreneurs and managers to identify skills gaps, geographical localisation and financial capacity. Limited awareness about the positive impact of training on performance and the possibilities to access training, including as offered by public programmes, also play a role.

Lack of time and limited strategic attention and awareness by entrepreneurs and managers can represent major obstacles to training engagement in SMEs (Cardon and Valentin, 2017<sup>[40]</sup>; OECD, 2021<sup>[38]</sup>). The lack of strategic attention by the entrepreneur or management may also reflect perceptions that training is a response to norms or regulatory requirements (e.g. health and safety requirements) rather than a value-generating activity (Marchese et al., 2019<sup>[2]</sup>; OECD, 2019<sup>[1]</sup>).

In addition, acquiring information about training opportunities for SMEs can be problematic, because, unlike large firms, they often do not have a dedicated human resources unit, rather performing ad hoc and informal human resources (HR) activities, and have little time to spare among existing staff (ILO, 2017<sup>[41]</sup>; Štangl Šušnjar et al., 2016<sup>[42]</sup>).

In the case of SMEs, especially micro enterprises, the entrepreneur plays a key role in the transformation of the business culture and the design and implementation of skills development strategies since knowledge and control are often centred on the entrepreneur. Many entrepreneurs, however, may not see the need for up- and re-skilling initiatives, as they are not used to continuous learning themselves, and are seldom the target of entrepreneurship training programmes, which, rather, tend to focus on young people (through initial education) or jobseekers (through the public employment services) (OECD, 2021<sup>[43]</sup>).

The upskilling and reskilling of management (where the manager may also be the firm's owner) is also particularly important when considering the functional and organisational changes faced by SMEs because of the green and digital transitions. Recent studies on how management should adapt to the digital shift for instance, stress the need for strongly developed leadership and HR skills, to foster a digital culture in the business and to ensure the workforce can cope with rapid developments and, especially for lower qualified workers, can operate in more digitalised business processes (Hamburg, 2019<sup>[44]</sup>). As a case in point, OECD research on preparing the tourism workforce for the digital future finds that managers' capability can represent a bottleneck, as they need technology-related knowledge to lead teams that may be fundamentally different in nature to those from traditional tourism employment, "conceptual level" skills and knowledge to implement digital strategies, and HR capabilities to support a flatter working structure (OECD, 2021<sup>[45]</sup>).

Even when entrepreneurs and SME managers can identify skills needs, have adequate information about the available options and develop a skills strategy, they may still find it difficult to pay for training opportunities, due to financial constraints and higher unit costs per worker relative to large firms. In addition to the direct financial costs for training, the opportunity cost is also often relatively higher for SMEs. Since they have fewer employees, they have less scope than large enterprises to release workers from revenue-generating activities for training. Furthermore, the difficulties that SMEs encounter in retaining trained and skilled staff, including due to poaching by other companies, can lower the return from training and thus discourage small businesses from undertaking the investment. This is especially the case for investments in skills that are not firm-specific and are easily transferable (ILO, 2017<sup>[41]</sup>; OECD, 2019<sup>[1]</sup>).

In addition, a large share of SMEs may not be able to use the numerous financial incentives available to cover training costs, either because they are not aware of these schemes or because they do not meet eligibility criteria (OECD, 2020<sup>[36]</sup>). A recent OECD study on SMEs in the era of hybrid retail (i.e. retailers using both offline and online sales channels) shows that, across countries, only a small share of SMEs are aware of the various programmes implemented by public authorities to foster the digital transition of the sector, often targeting business skill needs (OECD, forthcoming<sup>[46]</sup>).

The limited training opportunities offered by SMEs also weigh on their capacity to recruit talent and highly skilled workers, which represent another important channel for responding to changing skill needs. SMEs typically have greater difficulty in identifying, attracting and retaining skilled employees than large firms, largely due to a lack of a formalised HRM strategy and infrastructure, limited connection to networks that may give access to qualified workers, lower salaries, less attractive working conditions and reduced career opportunities (OECD, 2019<sup>[11]</sup>). In addition, flexibility in working models is becoming an important factor in the attraction of highly skilled workers, which can put fewer flexible businesses at a disadvantage in recruitment. For instance, SMEs that cannot fulfil requests for working from home are likely to lose attractiveness compared to those larger companies able to grant such conditions (Credit Suisse, 2022<sup>[47]</sup>).

## Skills policies need to account for the specificities of SMEs

### *Against this backdrop, commonly deployed skills policies are mostly generic in nature*

Across countries, skills policies deployed to support businesses are often generic, that is without due consideration for the specific features of companies in terms of size, productive specialisation and location. For example, skill policies remain focused on place-neutral support for higher education and vocational training (Corradini, Morris and Vanino, 2022<sup>[48]</sup>). Concerning digital skills, based on a cross-country analysis of 485 policies and 209 institutions, recent OECD work finds that governments place a relatively strong policy focus on creating a data culture and building relevant skills across the economy. However, the adoption of advanced digital technologies that are deemed important for all firms, such as the Internet of Things (IoT) or cybersecurity, is often supported by a general educational and training entry, whereas few initiatives exhibit an SME focus (OECD, 2022<sup>[17]</sup>).

In many cases, skills policies are designed and delivered assuming that SMEs and entrepreneurs will have a proactive attitude and will look for information and opportunities for upskilling and reskilling, as would larger companies. For example, many policy programmes are accessible through the Internet and offer SMEs and entrepreneurs the possibility to apply on line for grants or training opportunities, which implies prior information on the different opportunities.

In the same vein, skills policies are usually not specifically designed for SMEs, which need to compete with large companies to access policy instruments. This is the case, for example, of training funds linked to levies (i.e. levy-grant schemes), whereby registered companies are required by law to pay into a single central fund or sector-based funds. For those countries that implement such a scheme, the amount varies between 0.5% of company payroll (usually per month) and 2%. Companies apply to the fund to support the training they provide to their workers (from 50% to 100% cost recovery). However, evidence shows that such training funds are mainly used by larger employers (OECD, 2010<sup>[49]</sup>) (Johanson, 2009<sup>[50]</sup>) (Dar, Canagarajah and Murphy, 2003<sup>[51]</sup>) (CEDEFOP, 2008<sup>[52]</sup>).

The characteristics and attitudes of SMEs should also be taken into account when designing and delivering skills policies, including identifying possible beneficiaries. In this regard, it is important to distinguish between SMEs that have a passive approach and are unlikely to engage with skills policies and firms that are already implementing, by themselves, actions to improve their skills levels, and for which policy interventions would be redundant (Box 6.4). While useful to design and implement skills policies, however, this type of categorisation requires important information and a good understanding of the diverse SME populations.



### Box 6.4. Are all small firms open to change?

Small firms can be categorised according to their degree of openness to change. A four-fold typology of small firms is put forward by Besant, Tsekouras and Rush (2009<sup>[53]</sup>):

- **Passive firms:** These firms do not recognise the need for change and do not know what might be improved. Policy support will evolve around making them aware of the need for change and for a more strategic framework in business operations.
- **Reactive firms:** These firms recognise the need for change but are unclear on how to go about it in an effective way. They usually have limited internal resources and external networks. They require help in developing a strategic framework, addressing priority areas, exploring new concepts and acquiring new product and process capabilities.
- **Strategic firms:** These firms have a well-developed sense of the need to change and have good implementation capability. However, as they tend to compete within the boundaries of an existing industry, they may be unable to identify new market opportunities. Policy support should be geared towards complementing existing internal skills and challenging ongoing business models.
- **Creative firms:** These firms have well-developed internal capabilities and are able to operate and lead effectively on an international basis. They have strategic frameworks for innovation, strong internal resources and established collaborations with external partners. Policy support should focus on complementing existing internal capabilities.

Source: Besant, J., G. Tsekouras and H. Rush (2009<sup>[53]</sup>), “Getting the tail to wag – developing innovation capability in SMEs”, 10<sup>th</sup> International CINet.

Policy approaches that can leverage such level of information and deliver tailored skills services to SMEs – typically operate at the local and regional levels, where policy actions can connect to the ecosystems in which potential beneficiaries are active. This approach requires departing from space-blind approaches to skills policies, also to reflect the emerging new geographies of labour, which generate both challenges and opportunities for SMEs and entrepreneurs. The traditional challenges SMEs and entrepreneurs face in developing and accessing skills (for example a relatively low attractiveness for highly skilled workers compared with large companies) are magnified by the scale, scope and rapidity of the structural transformations – including the digital and green transitions – taking place in national and regional economies. In fact, the displacement of skilled workers and the consequent reallocation of skills and jobs in labour markets may generate new opportunities for SMEs to access highly skilled workers (with transversal skillsets) in their own communities, including through self-employed and entrepreneurs. From this perspective, providing SMEs and entrepreneurs with access to transversal skills may also be a way to tackle regional disparities depending on the availability and access to skills.

### ***Skills ecosystems play an important role in delivering bundles of transversal skills to SMEs and entrepreneurs***

To improve the capacity of (at least) reactive SMEs and entrepreneurs to access bundles of transversal skills, policies can leverage skills ecosystems. These are communities and networks in which SMEs and entrepreneurs operate and that contribute to their productivity, resilience and innovative capacity (Box 6.5).

### Box 6.5. Skills ecosystems

The concept of skills ecosystems, first proposed by Finegold (1999<sup>[54]</sup>) and later elaborated by scholars from diverse disciplinary backgrounds (Hall and Lansbury, 2006<sup>[55]</sup>) (Cooney et al., 2010<sup>[56]</sup>) (Buchanan, Anderson and Power, 2017<sup>[57]</sup>) (Lotz-Sisitka and Ramsarup, 2019<sup>[58]</sup>), attempts to explain and address constraints to skills utilisation and continuous skills development, while identifying and enhancing enablers. It pushes debates on skills beyond a binary focus on supply and demand for skilled labour (Hall and Lansbury, 2006<sup>[55]</sup>) (Spours, 2019<sup>[59]</sup>). It recognises that policy focused exclusively on supplying skills through vocational training risks poor labour market outcomes, while policies driven exclusively by linking skills development to industry demand cannot address the problem of skills underutilisation in the workplace. It instead emphasises how features of the social and institutional environment constitute “ecosystems” that either support or constrain demand for skilled labour, skills utilisation, and opportunities for ongoing skills development (Hall and Lansbury, 2006<sup>[55]</sup>). It resonates with arguments in economic geography that emphasise how the institutional context shapes the outcomes of development interventions (Rodríguez-Pose, 2013<sup>[60]</sup>).

Finegold identifies the main features of a skills ecosystem as follows: i) a contingent catalyst that triggers ecosystem formation, such as a change in market dynamics or new technological innovation that stimulates demand for skills in innovative firms; ii) “fuel” that allows those firms to grow and develop their capacity – a steady supply of trained workers and finance capital, for example; iii) an environment that supports high-level skills – such as good infrastructure; and iv) high-level interdependence between firms and other supportive institutions which, as in biophysical ecosystems, gives high-skill ecosystems self-corrective mechanisms that increase their resilience. Dense social networks within these ecosystems and research-industry linkages encourage fresh ideas to circulate, leading to continual innovation and continuous demand for new, high-level skills.

Source: (Finegold, 1999<sup>[54]</sup>), (Hall and Lansbury, 2006<sup>[55]</sup>), (Cooney et al., 2010<sup>[56]</sup>), (Buchanan, Anderson and Power, 2017<sup>[57]</sup>), (Lotz-Sisitka and Ramsarup, 2019<sup>[58]</sup>), (Spours, 2019<sup>[59]</sup>), (Rodríguez-Pose, 2013<sup>[60]</sup>).

Skills ecosystems feature the presence of a pool of connected individuals and firms that specialise in a given productive sector/domain and whose proximity and continued interactions generate positive knowledge spillovers and benefits in terms of productivity and innovation (agglomeration effects).<sup>2</sup> Skills ecosystems offer SMEs channels to access bundles of technical and transversal skills, without the need of internalising them and fully bearing the related costs. Rather, skills can be accessed as “positive externalities”, through the specialised labour pool or in the form, for instance, of knowledge services. The abundance of these “positive externalities” enables SMEs to recognise their own skills gaps and needs, to identify and tap more easily into relevant expertise and respond to the need for “non-core” skills in a sustainable manner.

An ecosystem approach presents advantages to address the longstanding challenges SMEs encounter in identifying their skills needs, attracting talent and mobilising resources for upskilling and reskilling. An ecosystem approach, as already mentioned, could help tackle regional disparities, by adopting a spatial lens to design and implement skills policies. Leveraging on skills ecosystems can be effective to promote the absorptive capacity of SMEs and entrepreneurs towards policy actions, including those supporting their transition to a greener and more digital economy. For instance, skills ecosystems can provide opportunities for SMEs and entrepreneurs to improve their managerial and entrepreneurial skills. Skills ecosystems can also generate synergies between different policy actions supporting competitiveness and innovation, because of the interconnection of all actors. For this reason, adopting a skills ecosystem approach demands that skills policy and programmes are linked with other efforts to support business innovation

and growth, such as those embodied in regional development policies (Corradini, Morris and Vanino, 2022<sup>[48]</sup>).

### **Recent policy developments are increasingly tailored to SMEs and delivered with spatial lenses**

In recent years, governments have increasingly looked to adopt skills policy actions that are targeted at SMEs. Support measures mainly focus on raising awareness about skill needs, reducing training costs for SMEs and promoting workplace training, and adopting a range of instruments, including tax incentives and training subsidies (e.g. vouchers), often leveraging multiple public and private stakeholders, as well as relevant networks.

These approaches represent a shift from the traditional supply-side policies mainly focused on the offer of training, towards a more dynamic viewpoint targeting, in parallel, skills demand and use (Corradini, Morris and Vanino, 2022<sup>[48]</sup>).

This trend is particularly visible in the relationship with digital skills, where key objectives of building a data culture and fostering skills for the digital economy in SMEs are pursued through skills needs assessment, business advice and mentoring, targeted lifelong learning as well as financial support to commission private consulting (Table 6.1). Financial support is increasingly delivered in the form of vouchers, i.e. small grants or lines of credit to purchase services from public knowledge providers or private sector service providers. For example, the Irish Digitalisation Voucher offers SMEs up to EUR 9 000 for purchasing advisory services that could support the design and implementation of measures to move toward a data-driven business. The Slovenian Voucher for Raising Digital Competencies funds training to develop relevant managerial and workforce skills in the context of digitalisation projects within businesses (OECD, 2022<sup>[17]</sup>). The Spanish *Kit Digital* – developed by the Secretary of State for Digitisation and Artificial Intelligence in collaboration with the Spanish Chamber of Commerce and the private sector – plans to invest EUR 3 billion, between 2021 and 2023, to promote the digitisation of small businesses, micro firms, the self-employed and entrepreneurs. SMEs receive a digital voucher that they can use according to their specific needs, choosing among the different categories of digitisation solutions offered by the adhered “digitisation agents” that develop the services.<sup>3</sup> Spain also provides tailored services to SMEs through the Activa Industry 4.0 policy of the Ministry of Industry, Trade and Tourism, which offers digital transformation plans adapted to the specific needs of the individual firms and entrepreneurs.<sup>4</sup>

**Table 6.1. Creating a data culture and building relevant skills – Overview of SME-targeted policies in selected OECD countries**

Country	Institution	Policy	Description
Austria	Austrian Research Promotion Agency	Digital Pro Bootcamps	The Digital Pro Bootcamps programme supports companies and their employees in the systematic development of IT expertise and advanced digitisation skills. The programme sees highly motivated specialists from Austrian companies developed into “digital professionals” in shortened learning phases. In addition to IT expertise and advanced digitisation skills in specific areas of digitisation, the focus of the qualification is primarily on professional implementation skills.
Chile	Ministry of Economy, Development and Tourism	Digitise your SME	The programme offers events, workshops, training and tools, as well as a network of allies for the adoption of digital technologies, with the objective of guiding and accompanying SMEs in their digital transformation process.
		Technical Cooperation Services	The programme seeks to provide training to SMEs to facilitate the incorporation and use of technology in the management of their businesses. This includes for instance online training courses for SMEs on cybersecurity challenges and related tools.
	Digitise your Store	Grants for investments, technical assistance, training and marketing actions on digital technologies for warehouse management.	

Country	Institution	Policy	Description
Denmark	Ministry of Industry, Business and Financial Affairs	SME Digital	A co-ordinated scheme to support the digital transformation of Danish SMEs, which can benefit their ability to innovate in AI. It involves grants to SMEs to commission private consulting services on digitalisation matters.
Germany	Federal Ministry for Economic Affairs and Energy	Digital Now	Digital Now offers financial grants to stimulate the digitalisation of SMEs. Grants are provided to support investments in digital technologies and training employees on digital topics.
		Competence Center Digital Crafts ( <i>Mittelstand-Digital Zentrum Handwerk</i> )	The <i>Mittelstand-Digital Zentrum Handwerk</i> supports craftsmen and SMEs in tapping into the economic potential of digital transformation. In order to reduce information deficits, craftsmen and entrepreneurs are provided with practical information, guidelines, implementation and networking services, which are developed through six regional “showcases”.
Hungary	AI Coalition of Hungary	Data economy accelerator centre Debrecen	A centre dedicated to supporting business owners in generating data-based business intelligence. Company managers who are interested in the digital development of their business and in harnessing internally generated data can receive organisational and business development advice free of charge from specialised experts.
Netherlands	Ministry of Economic Affairs and Climate Policy	Commit2Data	A multi-year research and innovation programme based on a public-private partnership to explore new business models and opportunities around big data in specific application areas such as smart industry, energy and logistics. The programme also includes six data innovation hubs providing companies, particularly SMEs that are late adopters concerning innovation, with up-to-date knowledge, tools and training modules for the responsible use of AI and data.
		Accelerating digitalisation of SMEs	Through workshops the programme provides SMEs and entrepreneurs support in the areas of big data, online sales and marketing and automation, enabling them to independently apply digital applications.
		SME IDEA	A programme that supports SMEs in the development of lifelong learning activities including data skills that fit the needs of their specific company type, size and sector.

Source: OECD (2022<sup>[61]</sup>), *Financing Growth and Turning Data into Business: Helping SMEs Scale Up*, <https://doi.org/10.1787/81c738f0-en>, drawing on the OECD/EC Scale Up Project (<https://www.oecd.org/cfe/smes/sme-scale-up.htm>) and (OECD, 2023<sup>[62]</sup>) OECD Data Lake on SMEs and Entrepreneurship (data extracted on 21 June 2023).

Tailored skills policies for SMEs and entrepreneurs typically offer some form of assistance to help them understand their skills needs, navigate the training offer and identify the solutions that best fit their needs. To address the challenge of reaching out to a large number of small businesses while containing the costs that face-to-face delivery implies, in recent years, some countries have developed digital business diagnostic tools that offer generic business advice and can serve as an entry point to wider business support systems, including for skills development (OECD, 2020<sup>[63]</sup>). These tools are mainly targeted to entrepreneurs and managers to enhance the management capacity of SMEs to understand and address their skills needs. This is the case, for example, of the Skills for Better Business programme, launched by Ireland’s government in 2022. This comprises a free, online assessment tool allowing SME owner-managers to identify their current management and business capabilities and uncover which critical areas to target in order to enhance the business growth performance. The tool is coupled with a listing resource that helps SME owner-managers identify and engage with a wide range of management development and training supports available.<sup>5</sup>

Tailored skills policies are often delivered at the local level, mobilising local entities such as higher education institutions, or creating specialised institutions. For example, the Australian Industry 4.0 Testlabs initiative leverages facilities at research and education organisations like universities, where experts illustrate the potential of digital technologies and provide tailored skills training and education programmes for SMEs’ workforce. In the European Union, the network of Digital Innovation Hubs (DIHs) helps companies integrate digital tools and practices in their business processes, offering technology

infrastructure (in “competence centres”),<sup>6</sup> access to the latest knowledge and expertise for piloting, testing and implementing digital solutions, as well as financing. In Estonia, the Business Agency funds “technology competence centres” in order to provide SMEs with the technical capabilities to deploy ICT-based solutions and data-driven business models and encourage knowledge sharing between researchers and SMEs. As part of the Italian National Transition Plan 4.0 to support the Fourth Industrial Revolution, DIHs and i4.0 Competence Centres have been established across Italy to reinforce the innovation ecosystem. These hubs focus on spreading awareness of i4.0 technologies, courses on sector-specific advanced skills and fundamental i4.0 skills and development of industrial research and experimental development projects (OECD, 2021<sup>[64]</sup>; 2021<sup>[65]</sup>).

Some policy practices have been in place for decades and have gone through several positive evaluations. For instance, in the United Kingdom, the network of Catapults, which are research and technology organisations (RTOs), provides tailored support to SMEs and start-ups to develop their products, improve their processes and upskill and reskill their workforce. As a case in point, through the project High Value Manufacturing (HVM) Catapult, SMEs are granted access to expertise, capabilities and even specialist equipment and technology. HVM Catapult is based on a tailored support service of SMEs, in which Catapult staff proactively engage with SMEs (Department for Business, 2021<sup>[66]</sup>). There are seven HVM Catapult centres in the United Kingdom, and two of them are hosted by universities, to better connect research and innovation activities in specific sectors and localities.

### **Box 6.6. The Manufacturing Extension Partnership, United States**

The Manufacturing Extension Partnership (MEP) is a public-private partnership that provides solutions to SMEs leveraging on a network of 1 450 advisors and experts, distributed in approximately 430 MEP service locations across the United States. Administered by the National Institute of Standards and Technology (NIST), since its creation in 1988, the MEP system has become a source of trusted advice about new technologies, production techniques and business management practices for a significant number of firms (about 8 000 to 10 000 per year).

MEP focuses on SMEs that are already established. The MEP, like similar technology and innovation advisory services in other countries, responds to the fact that existing SMEs often face market imperfections and other systematic challenges in acquiring and deploying information, expertise, skills and other resources. These issues lead to difficulties in technological and business upgrading, contributing in turn to lagging productivity, innovativeness and competitiveness among many of these establishments ((n.a.), 2013<sup>[67]</sup>). The MEP services provide SMEs with expertise, diagnostics, mentoring, training and other support. It also plays a brokering role and provides access and referrals to other public and private resources (Shapira and Youtie, 2016<sup>[68]</sup>).

The MEP offers customised and accessible services, which are oriented to business outcomes, rather than to research. The SMEs that engage with the MEP do so because its services are customised to their needs: equivalent private sector sources are either more expensive or not available. If effective, MEP services should prompt intermediate business actions (including, but not limited to, equipment investment, enhanced plant layouts, employee training, process and quality improvements, cost reductions, and new products and marketing strategies) leading to improved business performance outcomes such as enhanced productivity, sustainability and growth for its clients.

#### **Higher education institutions can host MEP centres, as in the case of Purdue, Indiana**

Purdue University is a public land-grant research university, in the State of Indiana. The university is home to the Purdue MEP, which provides high-value, affordable solutions to local manufacturing SMEs.

The local MEP centre leverages resources in both the public and private sectors to help identify areas of improvement, streamline processes and increase the competitiveness of SMEs.

Purdue MEP offers tailored services, which are designed through onsite analysis projects and workshops. These tailored services span from human resource training (employee attraction and retention) to leadership development and lean manufacturing, to promote value and quality in production. The MEP centre can also mobilise the resources of the university and involve faculty in designing specific research and innovation process.

Source: Lipscomb, C. et al. (2017<sup>[69]</sup>), "Evaluating the impact of manufacturing extension services on establishment performance", <https://doi.org/10.1177/089124241774405>; NIST (n.d.<sup>[70]</sup>), *Manufacturing Extension Partnership (MEP)*, <https://www.nist.gov/mep>; U.S. Federal Register (2018<sup>[71]</sup>), *Hollings Manufacturing Extension Partnership Program ; Knowledge Sharing Strategies*, <https://www.federalregister.gov/documents/2018/07/18/2018-15265/hollings-manufacturing-extension-partnership-program-knowledge-sharing-strategies#:~:text=Since%20its%20creation%20in%201988,8%2C000%20to%2010%2C000%20per%20year.>

In the United States, the network of the MEP, administered by the NIST, offers business assistance to established SMEs, through centres located across the states (Box 6.6). Empirical studies show that SMEs that have benefitted from MEP support are more competitive and more resilient (Shapira et al., 2015<sup>[72]</sup>) (Lipscomb et al., 2017<sup>[73]</sup>). Training provided to SMEs is specific and includes technical and transversal skills related to entrepreneurial and management activities. MEP leverages existing local organisations such as universities and colleges, which host the centres. By localising within higher education institutions, MEP centres can capitalise on the research capacity, the laboratories and the social capital of the host institution, which often represents a local landmark for the community of SMEs and entrepreneurs.

Other policy programmes in the United States leverage on HEIs to deliver tailored skills bundles to SMEs in localities. For instance, the Small Business Development Centers (SBDC) programme counts on a network of universities and colleges. A specific example is represented by the University of Texas in San Antonio (UTSA), which has developed an SBDC International Trade Center that provides no-cost import and export advising, market research and training solutions for small businesses. SBDC agents accompany entrepreneurs and help them develop their business idea and business plan. The UTSA has internationalised this approach by creating a Center for Global Development, which has been supporting SMEs and entrepreneurs, including informal ones, in several Latin American countries and Tunisia (UTSA, 2021<sup>[74]</sup>).<sup>7</sup>

In the European Union, the Smart Specialisation Strategy hinges on the close engagement of HEIs and research institutions with the local business community, especially SMEs. The Academy for Smart Specialisation at Karlstad University in Sweden represents an example in this regard. The university co-operates closely with the regional government of Värmland. The two institutions have joined forces to create the academy, which is located within the university and has access to the research capabilities and the laboratories of the institution. The academy generates specific skills services for local businesses with a focus on SMEs, which for instance can access the training services provided by the Karlstad Lean Factory,<sup>8</sup> which promotes the values of lean manufacturing in the regional productive ecosystem.<sup>9</sup> This epitomises the role that HEIs can have to generate firm-level services in connection with education, research and innovation activities (OECD, 2020<sup>[75]</sup>).

Skills policies can also be deployed to unleash the growth potential of SMEs, for example via acceleration programmes that offer support to SMEs and entrepreneurs aiming to scale up their activities. Tailoring skills services is an important feature of these policies. For instance, in France, the *Accélérateur PME*, connected to Bpifrance, is both the national agency for innovation and the French Public Bank for Investment. *Accélérateur PME* offers tailored support to entrepreneurs through the 50 local branches of Bpifrance and works with micro businesses, SMEs and mid-caps (firms that have a medium-sized

capitalisation), offering solutions adapted to key steps in a business' growth such as business creation, financing, guarantees or equity investment.

Knowledge diffusion is at the heart of support measures for management learning and leadership development in SMEs. Initiatives such as the MaRS Discovery District in Toronto, Canada, one of the world's largest urban innovation hubs, have proved valuable in this regard, bringing together educators, researchers, social scientists, entrepreneurs and business experts under one roof, which combines labs, office space and events space. Key to the success of the MaRS Discovery District is the business advisory services and linkages to other stakeholders in the local entrepreneurial ecosystem (e.g. research organisations, financiers, etc.) (OECD, 2013<sup>[76]</sup>).

## Conclusion

Against the backdrop of international shocks, this chapter brings forward a narrative concerning the skills needs of SMEs, which does not focus merely on technical competencies but rather on bundles of transversal skills, related to the way in which SMEs and entrepreneurs develop their own business, cope with digital innovations and connect to partners (supply chains) and customers. These bundles of transversal skills encompass a range of “capabilities”: entrepreneurial competencies that affect the resilience and competitiveness of SMEs and entrepreneurs.

In addition, the chapter discusses the limitations for SMEs and entrepreneurs to fully internalise all the skills they need, including transversal ones. It underlines, however, that they can get access to such skills through their “ecosystem”, which results from their local community and the networks in which they are active. Providing SMEs and entrepreneurs with access to bundles of transversal skills, including interacting with partners and customers in their own ecosystem, can be effective to improve their overall capacity to cope with the digital and green transitions.

There are several international examples of policies that provide SMEs and entrepreneurs with training opportunities and connections to improve their transversal skills. Several of these policy actions have an explicit spatial dimension, as they accompany SMEs and entrepreneurs locally and offer tailored support to improve transversal skills. However, often these policies are small in scale, or relatively disconnected from other policy agendas. The fact that policy actions do not reach many SMEs and entrepreneurs, as well as the limited capacity to generate complementarities with other policy agendas related to regional development, innovation, sustainability, etc, represent key challenges that should be considered to improve the resilience and the competitiveness of a large number of SMEs and entrepreneurs across regions.

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## Notes

<sup>1</sup> Upskilling refers to an employee learning additional tasks to better perform his/her job. Reskilling refers to an employee learning a new set of skills in order to perform different tasks or a different job.

<sup>2</sup> Proximity is a multifaceted concept that does not depend only on geography. For example, agents can be close because of their cognitive, organisational, social and institutional proximity (Ben Letaifa and Rabeau, 2013<sup>[77]</sup>).

<sup>3</sup> Additional information about *Kit Digital* can be found on <https://espanadigital.gob.es/en/measure/digital-kit-program>.

<sup>4</sup> Additional information about Activa Industry 4.0 can be found on <https://www.industriaconectada40.gob.es/programas-apoyo/Paginas/activa.aspx>.

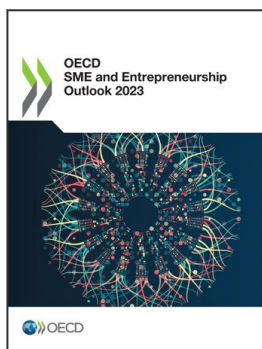
<sup>5</sup> See <https://skillsforbetterbusiness.gov.ie>.

<sup>6</sup> The term competence centre is used in different contexts to describe an infrastructure dedicated to knowledge organisation and transfer, and may have different meanings according to focus area, scope, domain and socio-economic framework. In general, competence centres are collaborative entities established and led by industry and resourced by highly-qualified researchers associated with research institutions empowered to undertake market focused strategic research for the benefit of industry.

<sup>7</sup> In 2018, the centre served over 500 businesses with advising and training services that resulted in the generation of over USD 567 million in global sales and that led in the creation and retention of 2 264 jobs (see [Geography of Higher Education webinar session: In conversation with Cliff Paredes](#)).

<sup>8</sup> See [www.kau.se/en/klf/about-karlstad-lean-factory](http://www.kau.se/en/klf/about-karlstad-lean-factory).

<sup>9</sup> Lean manufacturing principles – or lean thinking – were developed by Toyota in 1980s. Lean thinking promotes efficiency and collaboration in the production process and it is based on five key principles: value, value streams, flow, pull and perfection.



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