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Working conditions and sustainable work

SME digitalisation in the EU: Trends, policies and impacts

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Introduction

While megatrends such as the twin transition and demographic change continue to significantly impact economies and societies, global conditions remain in flux. The European Union stands at a critical juncture and is set to transition to become a more mature and self-sufficient entity. This critical moment is marked by two significant challenges: the ongoing Russian war of aggression against Ukraine and the imposition of higher tariffs by the United States on a wide range of goods. Alongside these challenges is the heightened instability in the Middle East, including the conflict between Israel and Gaza. To deal with these complex problems, the EU must move towards greater autonomy and strategic independence.

In this context, the digital transition of the EU's economy is a top priority. There are 25 million small and medium-sized enterprises (SMEs) driving growth, innovation and employment in the EU. SMEs account for 99 % of the EU's businesses and over half of its gross domestic product, making them vital to the EU's economic model. The EU has therefore established a vast array of programmes, particularly in response to the COVID-19 pandemic, to support SMEs in enhancing their level of digitalisation and increasing productivity and competitiveness. By leveraging digital technologies, SMEs can improve their operations, expand their market reach and develop innovative solutions to pressing challenges such as fighting climate change and increasing social cohesion.

As the EU embarks on the twin transition towards a sustainable and digital economy, SMEs are set to play an even more central role, underpinning Europe's competitiveness, prosperity and economic resilience.

Policy context

The European Commission has established new priorities to bridge the competitiveness gap between the EU and other major global economies. As strategic guidance, the Commission has published the Competitiveness Compass for the EU, the Draghi report on the future of European competitiveness and the Letta report on the future of the single market. The key objectives include boosting productivity and competitiveness, creating a regulatory environment that fosters technological progress and strengthening the interconnectedness of research, innovation, data, skills and education.

SMEs' potential is hindered by skills shortages. The Commission's Union of Skills initiative aims to address this challenge by strengthening education and training systems, supporting upskilling and reskilling through targeted programmes and creating the right conditions to attract and retain talent across the EU. The Commission is also striving to make EU policies and laws more straightforward and to implement and enforce them more effectively.

By streamlining rules and reducing administrative burdens, the Commission aims to create a more favourable business environment, drive growth and pursue ambitious economic, social and environmental goals. The Commission's efforts are expected to result in significant savings, with a 25 % reduction in administrative burdens for businesses and a 35 % reduction for SMEs, yielding EUR 37.5 billion in savings.

Key findings

- **Digital intensity varies across EU Member States.** The EU average rate of basic digital intensity in SMEs as measured by the European Commission is 73 %, with Denmark and Finland being the only Member States to have already reached the EU target of 90 %. A geographical divide is evident, with northern and western European countries exhibiting higher rates of basic digital intensity than their southern and eastern counterparts.
- **SME digitalisation is often driven by necessity rather than strategic planning**, with external factors such as labour shortages or the COVID-19 pandemic acting as a catalyst for the adoption of digital tools.
- **Continued government support is widely regarded as critical** for sustaining SME digitalisation, with a focus on targeted initiatives, financial incentives and partnerships with technology providers.
- **Digital adoption is hindered by a lack of investment in building digital resilience and by limited resources.** The resulting lack of digital skills in some areas can be a significant barrier to digital transformation in SMEs, including e-commerce adoption.
- **Member States have made significant progress in developing national digital and AI strategies**, with the Recovery and Resilience Facility providing financial backing for reforms and investments that accelerate digital transformation.
- Member States offer financial incentives **to support SMEs in their digital transformation** and green transition. Successful support schemes and agile measures with minimal bureaucracy, such as voucher programmes, have helped SMEs access funding for digitalisation and innovation.

- The **adoption of digital skills assessment tools to identify skills needs** and inform targeted training **remains limited among SMEs**, particularly among smaller businesses and those in less digitised or more traditional sectors. To bridge this gap, SME associations, chambers of commerce and other industry organisations are essential in promoting awareness among SMEs of the importance of these tools and how to use them.
- The **presence of large multinational corporations can boost digitalisation** among nearby SMEs through positive spillover effects, but SMEs outside these networks often fall behind due to limited resources and weaker market incentives.
- Small and medium-sized workplaces (SMWs) are grouped into **three types** based on their level of digitalisation to study the impact of digitalisation on job quality in the dimensions of working time, work intensity, and skills and discretion.
  - **Digital tools and collaboration.** These SMWs use digital technologies to facilitate collaboration and communication among workers and tend to have a more flexible and autonomous work environment and lower work intensity.
  - **Work automation and monitoring.** These SMWs use digital technologies to automate tasks and monitor employee performance and tend to have a more controlled and structured work environment.
  - **Low digital intensity.** These SMWs make limited use of digital technologies and tend to have a more traditional and less flexible work environment. They are especially disadvantaged in regard to work autonomy and access to skills development and training.

Policy pointers

- **Develop coherent digitalisation policies with measurable targets**, aligned with the EU Digital Decade goals, to support SMEs and drive long-term success.
- **Invest in robust digital infrastructure** to enable SME digitalisation and foster a resilient business environment.
- **Foster innovation through collaboration among SMEs, larger firms, universities and research institutions**, using innovation hubs, digital sandboxes and sector-specific networks to drive digital adoption.
- **Invest in targeted digital skills development for SMEs**, using flexible, modular training and updated educational curricula to address the digital skills gap and support business growth.
- **Promote the responsible use of digital technology in SMEs**, with tools used to enhance collaboration, social interaction and worker engagement, while raising awareness of the potential negative impacts of excessive automation and performance monitoring on workers.

Introduction

While megatrends such as the twin transition and demographic change continue to significantly impact economies and societies, global conditions remain in flux. The European Union stands at a critical juncture and is set to transition to become a more mature and self-sufficient entity. This critical moment is marked by two significant challenges: the ongoing Russian war of aggression against Ukraine, which threatens regional stability, and the imposition of higher tariffs by the United States on a wide range of goods, which complicates transatlantic trade relations and poses a challenge to economic growth. The heightened instability in the Middle East, including the conflict between Israel and Gaza, is yet another challenge. Against this backdrop, the EU is compelled to steer a path towards greater autonomy and strategic independence, leveraging its collective strengths to mitigate external pressures and forge a more resilient future.

In this context, the digital transition of the EU's economy is a top priority. Accelerating digitalisation is essential not only to enhance productivity and competitiveness but also to reduce reliance on external technologies and supply chains. Digitalisation enables Europe to modernise its industrial base, improve public services and adapt to shifting geopolitical and economic landscapes. Moreover, the EU's 25 million small and medium-sized enterprises (SMEs) have a vital role to play in the digital transformation. They form the backbone of the EU's economy, accounting for 99 % of EU businesses and driving growth, innovation and employment. With around 100 million people employed in SMEs (around 60 % of the workforce), they account for over half of the EU's gross domestic product (GDP), making them a vital component of its economy.

SMEs play a crucial role in adding value across every sector, throughout manufacturing and services, and are essential links in both local and global supply chains. By developing and implementing innovative solutions to pressing challenges such as fighting climate change and increasing resource efficiency, they act as catalysts for progress. As the EU embarks on the twin transition towards a sustainable and digital economy, SMEs are set to play an even more central role, underpinning Europe's competitiveness, prosperity and economic resilience.

Recognising this, the EU has launched several initiatives and established numerous programmes and funding mechanisms to support SMEs in their digitalisation efforts, particularly in response to the challenges posed by the COVID-19 pandemic. Enhancing digitalisation among EU SMEs is a precondition for increasing productivity and competitiveness, ultimately strengthening the EU's economy and the prosperity of its citizens.

EU policy context

The current European Commission, which took office in 2025, has established new priorities to guide its mandate, with the goal of bridging the competitiveness gap between the EU and other major global economies, like the United States and China. The Commission has published several strategic documents outlining its vision for the EU's future, which it sees as shaped by climate neutrality and technological innovation. Among these are the Competitiveness Compass for the EU, the influential Draghi report on the future of European competitiveness and the Letta report on the internal market (Letta, 2024; European Commission, 2025a; European Commission: European Political Strategy Centre, 2025). The key objectives include boosting productivity and competitiveness by addressing the EU's innovation deficit, and creating a regulatory environment that fosters technological progress, supports innovative companies and enables SMEs in the EU to compete globally.

Furthermore, the Commission is prioritising strengthening the interconnectedness of research, innovation, data, skills and education to drive technological development, economic growth and social progress as highlighted in the Letta report on the future of the EU single market (Letta, 2024).

At the same time, SMEs' potential is hindered by skills shortages in the workforce; SMEs almost universally face issues in attracting and retaining talent (European Commission: Directorate-General for Communication, 2024). These shortages – which can be caused by supply shortfalls but can also be linked to the unattractiveness of particular occupations or trades or low-quality working conditions – present a significant obstacle. Targeted actions are required to empower SMEs to overcome this problem. While efforts have been made to promote a lifelong-learning approach as the key strategy for all businesses, challenges remain that prevent SMEs from fully engaging in these initiatives. Launched in March 2025, the European Commission's flagship Union of Skills initiative aims to enhance the EU's competitiveness, acknowledges the skills issues faced by SMEs and proposes ways forward (European Commission, 2025b). It seeks to tackle current labour market challenges by focusing on four main pillars: building skills for quality jobs and better lives; promoting continuous upskilling and reskilling; supporting the free movement of workers across the EU; and attracting, developing and retaining talent.

The development of the Quality Jobs Roadmap is another key initiative launched by the European Commission to advance quality employment across the EU (European Commission: Directorate-General for Employment, Social Affairs and Inclusion, 2025). Recognising that high-quality jobs are a cornerstone of competitiveness, social justice and fair transitions, the initiative was introduced by President von der Leyen in her political guidelines for the 2024–2029 mandate. The roadmap's formal presentation is expected by the end of 2025. It aims to promote fair wages, decent working conditions, access to training and equitable job transitions for both employees and the self-employed, with a particular focus on expanding collective bargaining coverage. Social partners will be actively involved in shaping the initiative to ensure that it delivers real benefits for workers and businesses throughout the EU.

Finally, the European Commission has made simplification, coherence and speed top priorities, with the aim of strengthening the EU's competitiveness and prosperity. To achieve this, the Commission is focused on simplifying EU policies and laws, improving their implementation and enforcing them effectively. The 'Simpler and faster Europe' communication outlines a new approach intended to boost growth, innovation and resilience, with simplification measures aimed at reducing regulatory burdens and costs for businesses and citizens (European Commission, 2025c). The Commission has set ambitious – some critics say overly optimistic – targets, including a 25 % reduction in administrative burdens for businesses and a 35 % reduction for SMEs, which is expected to result in EUR 37.5 billion in savings. By streamlining rules, reducing administrative burdens and promoting better implementation and enforcement, the Commission aims to create a more favourable business environment, drive growth and uphold high standards and pursue ambitious economic, social and environmental goals. These efforts are further reflected in the Omnibus I and II communications (European Commission, 2025d, 2025e).

Today's uncertain environment is marked by digital disruption, an unfolding climate crisis, the threat of US tariffs on EU goods and ongoing geopolitical instability. European SMEs will face significant challenges in the coming years to adapt to new economic realities. To remain resilient and ensure their survival, SMEs must stay competitive and be provided with the tools to adapt. Digitalisation can be a powerful driver of competitiveness, sustainable growth and social inclusion, enabling SMEs to thrive in a fast-changing economy.

Objectives and structure of the report

This research report offers insights into the digital transformation of SMEs across the EU, providing a snapshot of the current state of digitalisation and its impact on these businesses' operations, competitiveness and job quality. The report maps good practices and national initiatives, serving as a resource for policymakers to support SME digitalisation.

The report addresses the issue of supporting SMEs in their digital transformation, acknowledging their heterogeneity and the complexity of the challenges they face in adapting to a rapidly changing technological environment. This transformation is influenced by multiple factors, including access to digital skills, infrastructure, financial resources, national policies and support measures. The specific issues this report explores include the following.

- **Challenges in and barriers to SME digitalisation.** The report identifies key challenges in and barriers to SME digitalisation, including infrastructure limitations, financial constraints and digital skills shortages.
- **Policies and support measures for SME digitalisation.** The report explores the national strategies, policies and support measures that influence SME digital transformation, including regulatory frameworks, targeted initiatives and EU-driven programmes.
- **Role of national contexts.** It highlights the importance of national contexts in shaping SME digitalisation, including differences in regulatory frameworks, support measures and cultural attitudes towards digitalisation.
- **Digital skills in SMEs.** By exploring the role of digital skills in driving SMEs' digital transformation – including the availability of information and communication technology (ICT) specialists, training opportunities and national policies for upskilling and reskilling – the report highlights the importance of continuous learning in maintaining competitiveness in the digital economy.
- **Job quality and digitalisation.** The report investigates the relationship between job quality and digitalisation. It examines the impact of digitalisation on work organisation and working conditions in SMEs, including the use of digital tools, algorithmic work management practices and correlations with worker well-being, engagement and health.
- **Guidance for policymakers.** By offering policy pointers, the report supports decision-makers in improving the digital environment for SMEs, helping them to better adapt and stay competitive in a changing world.

The report is structured as follows.

Chapter 1 sets the stage for the report by examining the state of SME digitalisation across the EU using Eurostat survey data on ICT usage and e-commerce in enterprises. It explores key aspects, such as online sales, e-commerce and technology adoption in SMEs, and provides insights into the impact of COVID-19 on SME digitalisation.

Chapter 2 explores the policies and support measures influencing SME digital transformation, including national strategies, regulatory frameworks and EU-driven programmes. It also reviews the challenges SMEs face, such as infrastructure limitations and digital skills shortages, and identifies potential areas for improvement.

Chapter 3 focuses on digital skills in SMEs and their role in driving business digital transformation. It examines the recruitment and employment of ICT specialists, skills requirements and training opportunities in SMEs, and it reviews national policies and support measures aimed at helping SMEs upskill and reskill their workforce.

Chapter 4 explores the relationship between job quality and digitalisation, using data from the 2024 European Working Conditions Survey (EWCS) ([1]). It examines the extent to which workers use digital devices and equipment, and explores correlations with working conditions and worker well-being, health and engagement.

The report ends with conclusions and policy pointers derived from the analysis of the data and information collected during the study.

Data sources and methodology

This report summarises the key findings of a study that combines both quantitative and qualitative research methods. Drawing on various European data sources, it provides a comparable perspective on the state of digitalisation among SMEs in the EU, measuring digital progress and identifying trends. The data also offer insights into job quality (including the use of digital technologies in European workplaces), the implications for working conditions and the extent to which workers are equipped with the skills required to drive digital transformation. Expert interviews, complemented by desk research, were instrumental in contextualising the survey data – revealing barriers to digital adoption, gaining a deeper understanding of SMEs' needs, identifying digitalisation strategies and adding nuance that numbers alone cannot offer.

Data sources and analysis

The quantitative analysis in this report draws on the following main data sources.

The first is the trend data from the Eurostat ICT usage and e-commerce in enterprise survey (2010–2024), which is the primary data source that feeds into the Digital Economy and Society Index (DESI). This is a composite index developed by the European Commission to measure the EU Member States' progress regarding digital economy targets. The data are collected on a yearly basis by national statistical institutes and are based on the annual Eurostat model questionnaires ([2]). The survey population consists of enterprises with 10 or more employees and self-employed people. Microenterprises with fewer than 10 employees are not captured in the section referring to this survey.

The second data source is the 2019 European Company Survey (ECS), which is used for structural information mainly. The ECS 2019 was a cross-national survey conducted in 21 869 establishments across the 27 Member States and the United Kingdom. The target population included all establishments with 10 or more employees in economic sectors classified as 'market activities' in the countries surveyed. Establishments were contacted via telephone to identify a respondent from management and, where possible, an employee representative respondent. Respondents were asked to complete the survey online. An online follow-up to the ECS 2019 was conducted in November 2020, drawing on the same sample of establishments. Both surveys were conducted jointly by Eurofound and the European Centre for the Development of Vocational Training (Cedefop) (see Eurofound and Cedefop, 2020; Eurofound, 2021). The ECS data presented in this report exclude the United Kingdom. The data used for the report are based on interviews with managers only, and not with employee representatives.

The third data source is Cedefop's second European Skills and Jobs Survey (ESJS2), which asked 46 213 adult workers about job skill requirements, digitalisation, skills mismatches and initial and continuing learning (Cedefop, 2022). The survey was fielded in the second quarter of 2021 in the EU-27 plus Norway and Iceland.

The fourth data source is the EWCS 2024, Eurofound's longest-running survey (ongoing since 1990), covering approximately 36 000 workers in all Member States plus eight other European countries: Albania, Bosnia and

([1]) For more information on the EWCS 2024, see https://www.eurofound.europa.eu/en/surveys/european-working-conditions-surveys/european-working-conditions-survey-2024.

([2]) For more details on the data collection and the model questionnaires, see https://ec.europa.eu/eurostat/cache/metadata/en/isoc_e_esms.htm.

Herzegovina, Kosovo [3], Montenegro, North Macedonia, Norway, Serbia and Switzerland. The analysis presented in this report only includes data from Member States and Norway. The fieldwork of conducting face-to-face interviews ended in November 2024, and the first results and data became available in 2025. The EWCS provides a comprehensive picture of people's everyday reality at work.

Desk research and expert interviews

Another complementary strand of research involved conducting 81 in-depth qualitative interviews with national experts from government bodies, SME employer organisations, academia or research organisations and training or digital solutions providers (Table 1). A semi-structured interview guide, jointly prepared by Eurofound and Cedefop, was used in carrying out the interviews. The guide is available upon request.

The feasibility of conducting expert interviews varied across countries due to differences in expert availability, willingness to participate and accessibility. In some cases, reaching relevant experts was more challenging due to limited networks, time constraints or a lack of engagement despite targeted outreach efforts. To mitigate potential imbalances in interview representation, findings were cross-validated with secondary research, policy documents and other relevant sources.

Eurofound conducted the interviews in nine countries (Austria, Belgium, Germany, Ireland, Italy, Portugal, Romania, Slovenia and Spain), while Cedefop conducted the interviews in five (Bulgaria, Croatia, Cyprus, Estonia and Luxembourg). National correspondents from the Network of Eurofound Correspondents conducted the interviews in the remaining 11 countries (Czechia, Finland, France, Greece, Hungary, Latvia, Lithuania, the Netherlands, Norway, Poland and Sweden).

Experts were asked to discuss several topics, including structural and contextual factors influencing SMEs' performance in key DESI indicators, the impact of the COVID-19 pandemic on SME digitalisation, the level of digital technology adoption and barriers to uptake, and existing policies or measures supporting SME digitalisation efforts.

To supplement the experts' input, a review of government and institutional sources and academic literature was also conducted. In Denmark and Malta, while desk research was conducted, securing the participation of experts from relevant organisations proved challenging and, as a result, no expert interviews were carried out. In Slovakia, interviews could not be secured and desk research was not possible, as the resources allocated to the study had been exhausted.

Table 1: Number of expert interviews by country and type

Country	Government body	Employer organisation	Trade union	Academia or research organisation	Training or digital solutions provider
Austria	1	1		1	
Belgium		1			
Bulgaria	2			1	
Croatia					1
Cyprus	1	2		1	
Czechia	2	3			
Estonia	3			1	
Finland	1	1	1		
France		1			4
Germany				1	
Greece		2	2	1	
Hungary	1		1	1	
Ireland	2	2			
Italy		3	1	1	
Lativa	2	3			
Lithuania	3	3		1	1
Luxembourg		1			
Netherlands	1	1		1	1

[3] This designation is without prejudice to positions on status, and is in line with UNSCR 1244/1999 and the ICJ Opinion on the Kosovo declaration of independence.

Country	Government body	Employer organisation	Trade union	Academia or research organisation	Training or digital solutions provider
Norway	2	1			
Poland	2	1			1
Portugal		2		1	
Romania		1	1		
Slovenia	1				
Spain		1			
Sweden	1	1	1		
Total	**25**	**31**	**7**	**11**	**8**

Source: Authors' elaboration.

Expert views are reported without specifying the exact type of expert or offering a professional profile. Given the varying number of interviews conducted across countries and the imbalance in the representation of different types of expert, specifying categories could create a misleading impression of weighting or prioritisation. Furthermore, many experts have interdisciplinary expertise, with insights spanning multiple domains, such as SME operations, digital transformation, policy and industrial relations. Strict categorisation could oversimplify their contributions and distract from the broader thematic analysis.

1 Digitalisation of SMEs in the EU

Digital profiles

According to the ECS 2019 and as shown in Table 2, 27 % of SMEs (and 35 % of large businesses) across the EU were classified as highly digitalised. In all of these establishments, at least 20 % of staff use computers daily. In 78 % of establishments, this figure rises to 80 % of employees. These highly digitalised SMEs are more likely to have recently purchased customised software (68 %). In addition, the use of robots is slightly above average. Notably, nearly all (97 %) of these establishments use data analytics for process improvement, while almost half (46 %) use them for employee monitoring. Furthermore, a substantial proportion (44 %) engage in e-commerce, buying or selling goods or services online. 45 % of SMEs are categorised as making significant use of at least one digital component, whereas just under a third (29 %) have limited digitalisation (Eurofound and Cedefop, 2020).

Digital intensity

The digital intensity score, which is measured in the context of the DESI indicators, is based on how many of the 12 selected digital tools, technologies, practices and capabilities are present in enterprises. The metrics include having at least 50 % of employees use the internet for business purposes, e-commerce sales accounting for at least 1 % of turnover and ICT security measures or remote access to the enterprise's email systems, documents or applications ([4]). Digital Decade country reports ([5]) are published annually to monitor the Member States' progress in achieving their 2030 digital targets. The EU 2030 target aims for 90 % of SMEs to have adopted at least 4 of the 12 selected digital tools, technologies, practices and capabilities.

A key aspect of this analysis is the basic level of digital intensity, defined as the adoption of at least four of these elements, to assess the extent SMEs have adopted digital technologies in their operations. A low level of digital intensity means that SMEs may struggle to compete in an increasingly digital market. Without adequate digital adoption, they risk falling behind in terms of efficiency, innovation and customer reach, ultimately impacting their growth and competitiveness within both local and global markets.

Basic level of digital intensity

As of 2024, only Denmark and Finland had successfully reached the ambitious EU Digital Decade 2030 target of 90 % of SMEs achieving at least the basic level of digital intensity. Both Member States have highly digitalised economies and societies, supported by robust digital infrastructure and long-standing, comprehensive digital strategies and policies. The EU average rate of basic digital intensity in SMEs stands at 73 %, highlighting the remaining gap that must be closed to reach the 2030 goal. The data also reveal significant variation among Member States, with digital adoption among SMEs ranging from 50 % in Bulgaria to 93 % in Finland (Figure 1). This wide disparity highlights the uneven pace of digital transformation among SMEs across the EU.

SME digital adoption across the EU remains uneven, with northern European countries leading in basic digital intensity.

Table 2: Digital profiles of establishments by size class in the EU, 2019 (%)

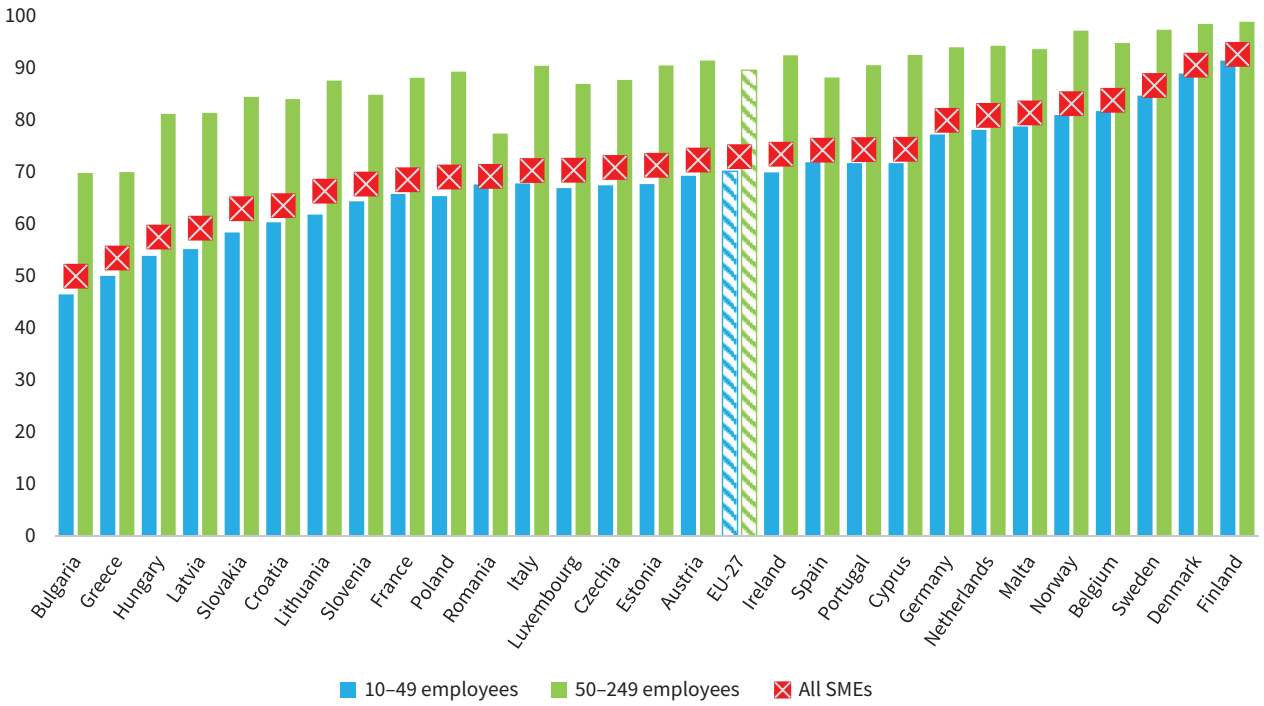
	10–49 employees	50–249 employees	All SMEs	250+ employees
Highly digitalised	27	32	**28**	35
High computer use, limited use of other digital technology	28	18	**26**	10
High use of robots and other digital technology, limited computer use	17	28	**18**	40
Limited digitalisation	29	22	**28**	15

Notes: The target population of the ECS is all establishments with 10 or more employees in economic sectors engaged in market activities. Values may not always add up to 100 % due to rounding.
Source: Eurofound and Cedefop, 2020, ECS management questionnaire.

([4]) For more details, see the digital intensity index overview.

([5]) Country reports are available at https://digital-strategy.ec.europa.eu/en/library/digital-decade-2024-country-reports.

Figure 1: Share of SMEs with at least the basic level of digital intensity, EU-27 and Norway, 2024 (%)



Note: All activities (except agriculture, forestry and fishing, and mining and quarrying), without financial sector.
Source: Eurostat survey on ICT usage and e-commerce in enterprises.

A geographical divide is evident, with northern and western European countries, such as Sweden, Denmark and Finland, exhibiting higher rates of basic digital intensity than their southern and eastern counterparts. Member States like Germany and the Netherlands also demonstrate relatively high rates of basic digital intensity, whereas Bulgaria, Greece, Hungary and Latvia lag well behind. This suggests that while some Member States are making significant strides in digital adoption, others still have considerable ground to cover to remain competitive in the digital economy.

While recognising that the basic level of digital intensity is a useful synthetic indicator, the national experts in Estonia, Hungary, Italy and Poland, particularly those from academia and research organisations, noted potential limitations in the extent to which this metric captures the full scope of SME digitalisation in their countries, or shortcomings linked to the fact that very small enterprises are not covered by the DESI.

One expert referenced another data source on the state of SME digitalisation in Hungary – the Digimeter survey ([6]) – which nonetheless supports the DESI finding that the overall level of SME digitalisation in Hungary remains far from promising. Recent research based on this survey indicates that there was no significant progress between 2020 and 2022. Hungarian SMEs continue to underutilise information technology (IT) tools, missing opportunities to leverage their full potential for business growth and innovation (Pintér, 2023).

The basic digital intensity indicator is useful but masks country-specific strengths and weaknesses that should be considered and weighed.

An expert from Italy pointed out that the digital intensity indicator masks both the country's strengths and weaknesses, highlighting the need for a more detailed understanding of Italian SMEs' digitalisation. Some of the reservations about the digital intensity indicator relate to significant year-to-year fluctuations, particularly between 2021 and 2022. These variations arise from annual variations in the composition of the indicator; small changes in any one subindicator can disproportionately affect the overall score. However,

([6]) More information on the survey is available at https://smartcraft.com/the-digimeter-2025-survey-is-live/.

such fluctuations are well documented and form an acknowledged aspect of the DESI's methodology.

According to national experts, the slow pace of digitalisation among SMEs in Bulgaria and Greece is largely due to the concentration of these businesses in traditional sectors or low-to-medium-tech manufacturing industries. These sectors tend to lag in digital transformation, struggling to integrate technological innovations into their products and services. In Greece, progress in SME digitalisation within traditional industries has focused primarily on improving the distribution of products and services to end customers. The experts also highlighted several key conditions necessary for SMEs to advance their digital transformation. These challenges are not unique to these two Member States but are also relevant to other countries where SMEs demonstrate similarly low levels of digital intensity.

One of the primary obstacles is the lack of awareness among SMEs about the critical role of digitalisation in enhancing competitiveness, sustainability and growth. Many businesses underestimate how digital technologies can improve efficiency, expand market reach and strengthen resilience. Increasing awareness would help SMEs view digital transformation as a necessity rather than an option, encouraging them to take proactive steps towards digital adoption.

Achieving basic digitalisation is a prerequisite to progress to more advanced technologies, such as AI. Establishing a strong foundation through fundamental digital tools and processes is crucial to ensure a smooth transition to more complex digital solutions. However, many small businesses struggle with this initial step, which serves as a significant barrier to further technological advancements.

Even in countries with a higher-than-average rate of basic digital intensity, experts identified areas for improvement. For instance, some national experts in Sweden noted that the digital development gap between Sweden and other Member States has narrowed. This trend reflects a natural outcome of digitalisation acting as a driver of convergence (Baldwin, 2016). As digital capabilities become more accessible across the EU, countries that were once behind are catching up, enabled by the diffusion of ICT. From this perspective, the narrowing gap should be viewed as a sign not of Sweden's failure to maintain its lead but, rather, of progress for the EU as a whole.

In Sweden, the national experts interviewed attributed the narrowing digital gap partly to a lower prioritisation of training on how businesses can fully leverage digital technologies, especially in comparison with later-adopting countries. Although Sweden has strong foundations to support digitally driven business models at scale, a persistent shortage of digital skills remains a key barrier to full transformation. Another key challenge, according to the experts consulted, is the country's business structure. In 2022, Sweden had approximately 1 million businesses, 96 % of which were small enterprises with fewer than 10 employees. Since smaller businesses often have limited resources to invest in digital infrastructure and training, a significant share meets the basic digital intensity requirements only, limiting their ability to fully embrace digital transformation.

Most experts interviewed emphasised that continued investment in workforce skills is an essential prerequisite for increasing digital intensity in SMEs. To stay competitive, SMEs must prioritise upskilling and reskilling their employees, particularly in science, technology, engineering and mathematics (STEM) fields, financial literacy and entrepreneurship (see Chapter 3). A digitally competent workforce is essential for adapting to the evolving demands of the digital economy and effectively leveraging new technologies. Without adequate digital skills among employees, the adoption of innovative tools and processes remains limited.

A common thread throughout the expert interviews was that SME digitalisation is often a response to necessity. External pressures, such as labour shortages, frequently serve as catalysts that accelerate the adoption of digital solutions. Digitalisation tends to occur at the process level rather than across entire businesses, meaning that specific functions – such as invoicing or logistics – may be digitised while the overall business remains largely traditional. The fragmentation of digitalisation among SMEs is another critical point. SMEs integrated into global supply chains or working with multinational companies are more likely to adopt digital solutions due to stringent efficiency and quality standards. Experts from countries such as Ireland and Sweden also noted that the presence of large multinational corporations can have a positive spillover effect on SMEs. In contrast, SMEs outside these networks tend to lag behind due to financial constraints and no immediate market pressure to digitalise.

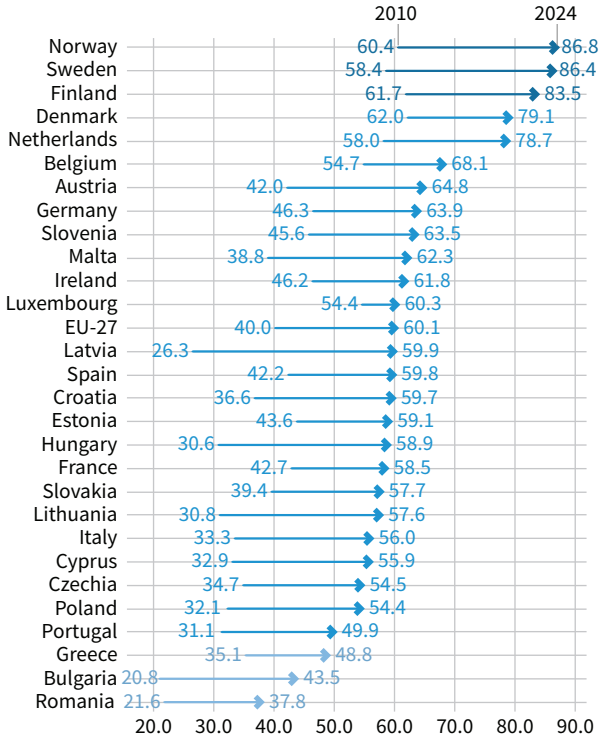
Use of computers and the internet

Figure 2 shows the growth in the proportion of SMEs in which employees use computers and the internet. Between 2010 and 2024, the EU-27 saw a significant increase in this proportion, rising from 40 % to 60 %. However, this trend masks considerable variation among Member States. Norway, Sweden and Finland report the highest proportions of SMEs where employees use computers and the internet, while Latvia, Hungary, Lithuania and Sweden experienced the most notable increases. In terms of changes in ranking, Latvia, Hungary, Malta and Austria made the most significant gains, improving their relative positions between 2010 and 2024. Conversely, Greece, France, Estonia and Luxembourg slipped down the rankings over the same period. Romania and Bulgaria were at the bottom of the ranking in both years, with only 38 % and

44 % of SMEs, respectively, having employees who used computers and the internet in 2024.

The differences between small (10–49 employees) and medium-sized (50–249 employees) organisations were not large and amounted to 2.5 percentage points in the EU overall. The largest differences were observed in Belgium and Ireland (> 6 percentage points).

Figure 2: Use of computers and the internet by employees in SMEs, EU-27 and Norway, 2010 and 2024 (% of SMEs)



Notes: All activities (except agriculture, forestry and fishing, and mining and quarrying), without financial sector; enterprises with 10–249 employees only.
Source: Eurostat survey on ICT usage and e-commerce in enterprises.

One key indicator of digital intensity is the percentage of companies where more than 50 % of employees have access to the internet for business purposes. According to Eurostat data, 53 % of SMEs and 64 % of large organisations meet this criterion. The Nordic countries (Denmark, Finland, Sweden and Norway) top the rankings, with Denmark at 72 % and Norway at 84 %. Conversely, Cyprus, France, Italy, Poland and Portugal trail behind, with less than 50 % of SMEs meeting this threshold.

Related to internet use is another DESI indicator covering connectivity and download speed. As of 2024, 88 % of SMEs in the EU-27 had connections with a maximum contracted download speed of at least 30 Mb/s on their fastest fixed line internet connection. However, some Member States lag behind in this regard. Hungary, Latvia and Austria rank lowest, with 70 %, 74 % and 75 % of SMEs, respectively, having this type of connection. Interestingly, Romania, which often features at the bottom of digital intensity rankings, bucked this trend, with 95 % of its SMEs boasting this connection type, placing it among the top four Member States.

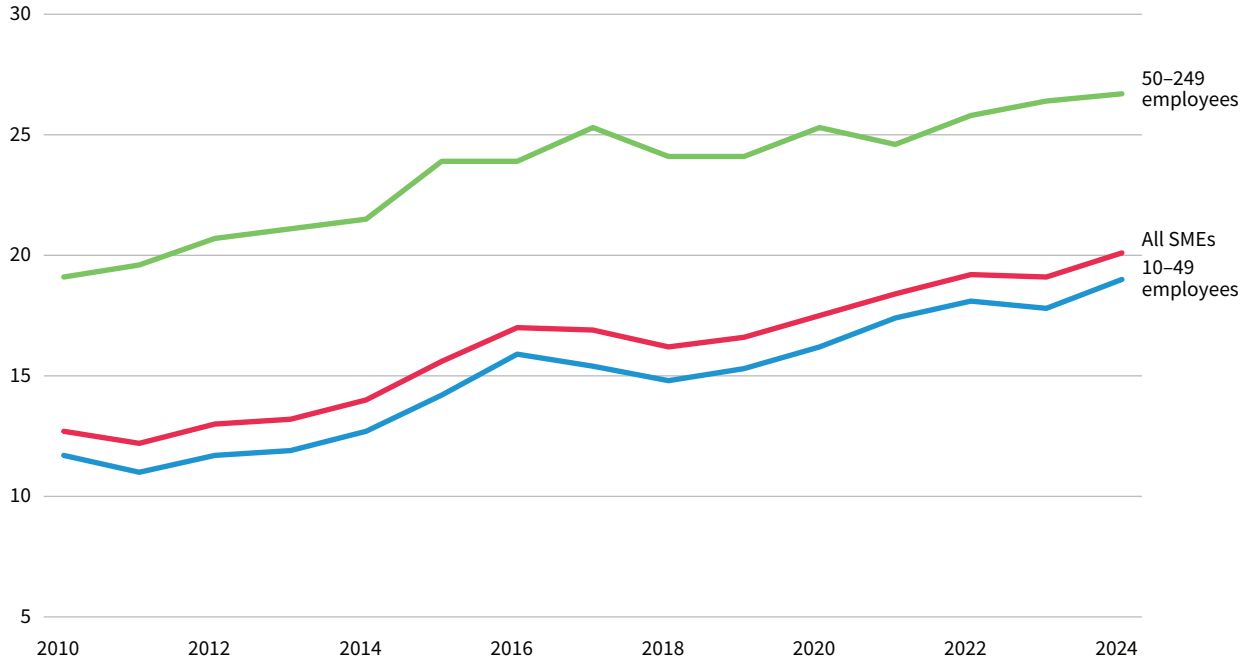
E-commerce and online sales: Adoption and obstacles

E-commerce refers to buying or selling goods or services on the internet. Figure 3 illustrates the trend in SMEs engaging in e-commerce and online sales (accounting for at least 1 % of total turnover). The data show a steady growth in adoption among SMEs over the years, with some minor fluctuations. Between 2010 and 2024, the percentage of SMEs with 10–49 employees engaging in e-commerce increased from 12 % to 19 %, while those with 50–249 employees saw an increase from 19 % to 27 %. Overall, the total percentage of SMEs participating in e-commerce rose from 13 % to 20 % during this period, indicating a growing trend towards online sales. SMEs with 50–249 employees have shown a consistently higher level of e-commerce adoption than their smaller counterparts, suggesting that larger SMEs may be better equipped to leverage online sales channels.

SME e-commerce adoption is growing slowly, with gaps between countries. The experts consulted point to digital skills as key to expanding e-commerce uptake.

Complementing these findings, data from the ECS 2019 show that highly digitalised SMEs are twice as likely to engage in e-commerce than other types of organisation. As the digital environment continues to evolve, it is likely that e-commerce will play an increasingly important role in SMEs' success, making it essential for these businesses to develop and implement effective online sales strategies (OECD, 2023).

Figure 3: SMEs' engagement in e-commerce by size class, EU-27, 2010–2024 (%)



Note: All activities (except agriculture, forestry and fishing, and mining and quarrying), without financial sector.
Source: Eurostat survey on ICT usage and e-commerce in enterprises.

Unsurprisingly, the proportion of SMEs engaged in e-commerce varies among Member States, with the EU-27 average standing at 20 % (Figure 4). The lowest adoption rates are observed in Luxembourg, Bulgaria and Romania, ranging from 8 % to 13 %. The experts interviewed in Luxembourg noted that online sales among SMEs are underdeveloped, emphasising the need for greater efforts to encourage smaller businesses to embrace digital sales.

Despite having a strong e-commerce infrastructure, Poland is another Member State that underperforms relative to the EU average, with only 14 % of SMEs engaging in online sales. The experts interviewed suggested that the traditional nature of many Polish SMEs, which are focused on local markets, limits their incentives to transition online. However, some small businesses, such as local farmers, have successfully leveraged online platforms.

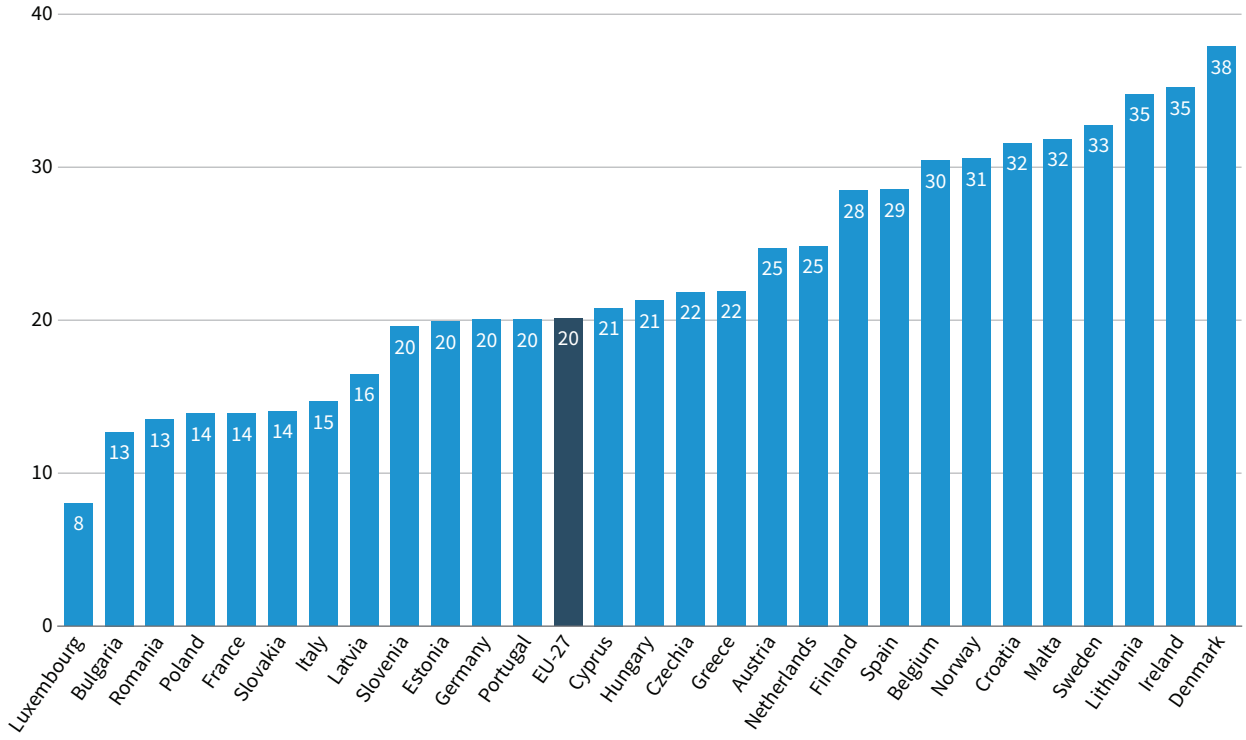
Italy also underperforms on this DESI indicator, with only 15 % of SMEs participating in e-commerce. National experts attribute the slow pace of digital transformation in sales to factors such as complex logistics, relatively low levels of digital skills and consumer reluctance to make online transactions. While the few Italian SMEs that do engage in e-commerce often generate significant revenue, they face challenges in expanding internationally.

In contrast, Denmark, Ireland and Lithuania exhibit much higher adoption rates, exceeding 30 % and reaching as high as 38 % in Denmark. According to the experts interviewed, the high adoption rate in Denmark is driven by a well-developed e-commerce ecosystem and high levels of digital literacy.

Ireland stands out as a unique case, benefiting from its geographical position. The experts interviewed noted that the country's SMEs are motivated to transition to online sales partly due to their relatively remote location and the availability of government incentives, like grants and vouchers, to support SMEs in enhancing their online presence.

Government support, along with a strong digital infrastructure, has also been key in boosting SME participation in e-commerce in Member States including Lithuania and the Netherlands. Lithuania's rapid shift to online business, accelerated by the COVID-19 pandemic, highlights the country's proactive digitalisation efforts, supported by EU funds. Experts noted that Lithuania's robust digital infrastructure, combined with an entrepreneurial spirit, has driven significant e-commerce growth among SMEs. The Netherlands, with its well-established e-commerce platforms and high level of digital literacy, has created a favourable environment for the growth of online sales, particularly in sectors like fashion and home goods. The trend was

Figure 4: Engagement in e-commerce among SMEs, EU-27 and Norway, 2024 (%)



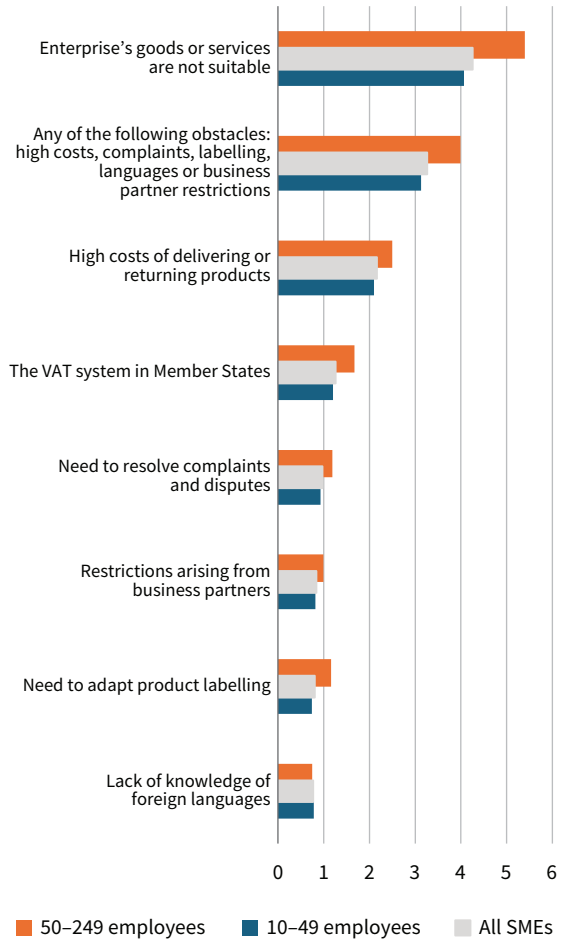
Notes: All activities (except agriculture, forestry and fishing, and mining and quarrying), without financial sector; enterprises with 10–249 employees only. Some bars with the same percentage label (e.g. Bulgaria and Romania with 13 %) are different sizes due to rounding.
Source: Eurostat survey on ICT usage and e-commerce in enterprises.

similar in Luxembourg, where the pandemic acted as a wake-up call for small firms selling over the counter. Such firms found new ways to reach customers, setting in motion a movement towards online selling. The expert consulted in Belgium also observed a significant acceleration in e-commerce during the pandemic. However, they noted that many companies that launched online shops are now struggling to keep them aligned with their physical stores. As a result, some businesses are abandoning their e-commerce platforms altogether.

Figure 4 highlights a mixed geographical pattern, with Denmark (38 %), Ireland and Lithuania (both 35 %) leading in e-commerce adoption, while Luxembourg lags significantly behind with 8 %, followed by Bulgaria, Romania, Poland, France and Slovakia with proportions below 15 %. The findings also highlight the importance of e-commerce for businesses in the EU, with significant opportunities for growth and development in countries with lower adoption rates.

Data on obstacles to e-commerce shed light on the various challenges faced by SMEs in adopting and implementing online sales strategies (Figure 5). The most significant obstacles include the unsuitability of their goods or services for online sales, with 4 % of SMEs with 10–49 employees and 5 % of SMEs with 50–249 employees reporting this as an obstacle. Furthermore, 2 % of SMEs with 10–49 employees and 3 % of SMEs with 50–249 employees cited the high costs of delivering or returning products as a challenge. Other notable challenges include resolving complaints and disputes, adapting product labelling and dealing with the VAT system in Member States. Smaller SMEs face more difficulties in these areas. The data also show that 3 % of SMEs with 10–49 employees and 4 % with 50–249 employees experience at least one of these obstacles, highlighting the need for targeted support and resources to help SMEs overcome these challenges, succeed in the online market and access the EU's single market economy.

Figure 5: Obstacles to e-commerce in SMEs by size class, EU-27, 2021 (%)



Note: All activities (except agriculture, forestry and fishing, and mining and quarrying), without financial sector.
Source: Eurostat survey on ICT usage and e-commerce in enterprises.

The national experts interviewed further elaborated on common obstacles faced by SMEs across countries regarding e-commerce and online sales, particularly limited digital skills. The digital skills gap not only hinders SMEs' ability to engage in e-commerce but also prevents them from keeping up with the latest digital trends and technologies. The skills gap affects various areas, including digital marketing, e-commerce platform management, online payment systems and data analysis. Experts also cautioned against assuming that e-commerce is inherently a cost-cutting solution, as it can increase expenses and demand skills that SMEs may lack. A 2023 Organisation for Economic Co-operation and Development (OECD) report on hybrid retail supports this view, highlighting that online sales do not always lower operational costs.

In **Italy**, the lack of digital skills was frequently cited as a barrier to SMEs establishing an effective online presence. Many Italian businesses, especially those in business-to-business sectors, face challenges in leveraging e-commerce platforms for direct-to-consumer sales due to a reliance on traditional sales channels and insufficient digital expertise. Similarly, **Cyprus** also struggles with a shortage of digital skills, which is identified as a key reason for the country's low e-commerce turnover despite a reasonable proportion of SMEs engaging in online sales.

In **Poland**, the digital skills gap has prevented many SMEs from transitioning to e-commerce, despite the country having a well-developed digital infrastructure. Many Polish SMEs, particularly those selling everyday consumer goods locally, lack the necessary skills to effectively sell online or utilise e-commerce platforms for broader market reach.

In contrast, **Lithuania** and **Portugal** have made significant strides in addressing the digital skills gap, with government initiatives aimed at upskilling the workforce and encouraging digital adoption among SMEs. However, the experts acknowledged that, even in these Member States, further improvements in digital skills are necessary to help SMEs fully capitalise on the opportunities presented by e-commerce.

E-business: Integrating internal processes and supply chain management

Broadly speaking, e-business includes business processes conducted on the web, internet, extranet and combinations of these. Such processes, aimed at customers, internal operations and management, encompass activities such as providing customer service, processing payments, managing production and supply chains, collaborating with business partners, sharing information, automating employee services and recruiting staff (Barney et al., 2025). E-business can facilitate operations and customer–client relationships for SMEs and large businesses. This section of the report focuses on the integration of internal processes and supply chain management systems.

SMEs are increasingly leveraging technology to streamline operations, enhance customer relationships and drive informed decision-making. Adoption rates of key software solutions, as shown in Table 3, vary across different segments, with larger SMEs demonstrating a greater propensity to invest in these tools. Notably, 66 % of medium-sized enterprises (those with 50–249 employees) utilise enterprise resource planning (ERP) software, 40 % use customer relationship management (CRM) software, and 31 % use business intelligence (BI) software. In contrast, smaller SMEs with 10–49 employees exhibit lower adoption rates: 38 % for ERP, 22 % for CRM and 11 % for BI. The differences in the adoption of any of those technologies between small enterprises and medium-sized enterprises are remarkable. While 72 % of companies with 50–249 employees have adopted at least one of these technologies, this is only the case in 45 % of smaller organisations. Overall, 49 % of all SMEs use at least one of these software types, underscoring the growing importance of technology in supporting business growth and competitiveness.

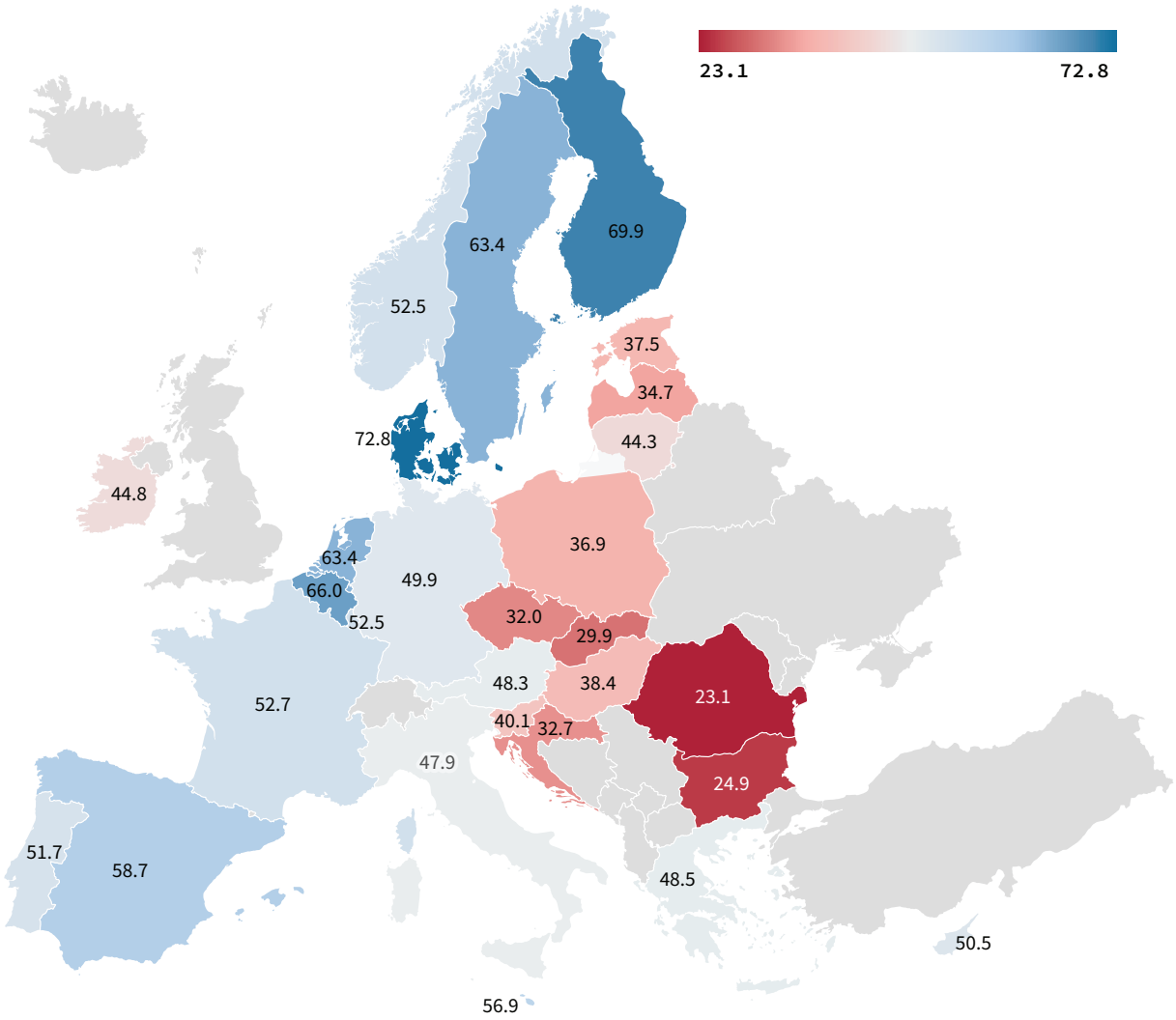
Table 3: E-business – Integration of internal processes in enterprises, EU-27, 2023 (%)

	ERP software	CRM software (*)	BI software	Any (ERP, CRM or BI)
10–49 employees	38	22	11	45
50–249 employees	66	40	31	72
All SMEs	**42**	**25**	**14**	**49**
250+ employees	87	61	63	91

Notes: All activities (except agriculture, forestry and fishing, and mining and quarrying), without financial sector. (*) Denotes data from 2021.
Source: Eurostat survey on ICT usage and e-commerce in enterprises.

There appears to be a divide in e-business adoption between eastern and western Member States, as illustrated in Figure 6. The figure indicates a notable variation in e-business adoption rates across the continent. Denmark, Finland and Belgium lead the way, with e-business participation rates at 66 % and over. Other western European countries such as Spain, the Netherlands and Sweden also demonstrate high rates of e-business engagement, ranging from almost 60 % to over 63 %. In contrast, eastern Member States exhibit comparatively low e-business participation rates. The lowest e-business adoption rates among SMEs are observed in Slovakia, Bulgaria and Romania, where less than 30 % of SMEs have adopted at least one of the technologies discussed above.

Figure 6: E-business adoption rates among SMEs, EU-27 and Norway, 2023 (%)



Notes: All activities (except agriculture, forestry and fishing, and mining and quarrying), without financial sector; enterprises with 10–249 employees only.
Source: Eurostat survey on ICT usage and e-commerce in enterprises.

The use of internal e-business systems is associated with linking business processes automatically to those of suppliers and/or customers. When it comes to the integration of internal systems, the use of supply chain management systems is again associated with the size of the organisation. While more than half of large enterprises across the EU use such systems, only 24 % of SMEs do. Within that 24 %, a notable difference exists between small enterprises and medium-sized enterprises; 21 % of small businesses but 37 % of medium-sized organisations employ these systems. Interestingly, some of the eastern Member States, namely Slovenia and Czechia, are leading the ranking in the adoption of supply chain management systems, with 37 % and 36 % of SMEs, respectively, employing them.

Big data, data analytics and AI

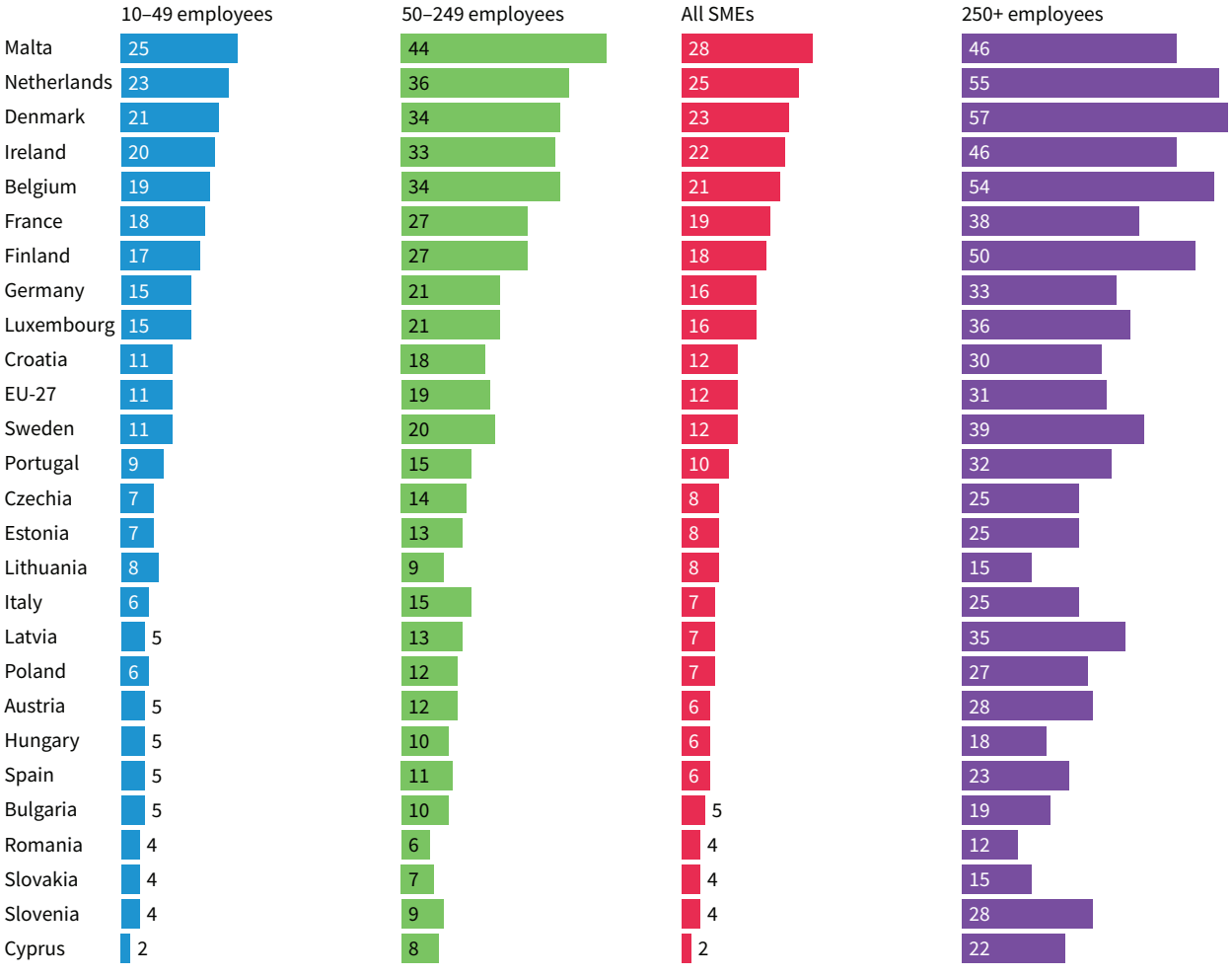
Big data, data analytics and AI are interrelated complementary technologies. Big data forms the foundation by providing vast amounts of both structured and unstructured data that power AI systems. Data analytics, on the other hand, is a technique used to extract valuable insights from big data. Increasingly, data analytics leverages AI-driven methods, such as machine learning and predictive modelling, to uncover patterns, identify trends and generate actionable insights.

Big data

Big data refers to large, complex and diverse sets of information that are automatically generated through systems such as scanners, social media platforms, business transactions or mobile devices. Big data is characterised by its vast volume, high velocity (often created in real time) and wide variety of formats. Managing big data requires specialised skills as well as advanced tools and methods.

In companies, big data analysis often originates from smart devices, sensors or geolocation data from portable devices. Eurostat collected information about the use of big data by enterprises in 2020. At that time, 12 % of SMEs reported utilising big data internally from any data source, with usage rates varying between 11 % for small enterprises and 19 % for medium-sized companies. In contrast, nearly one third of large enterprises reported using big data (Figure 7).

Figure 7: Big data analyses internally from any source by size class and Member State, 2020 (%)



Notes: All activities (except agriculture, forestry and fishing, and mining and quarrying), without financial sector. No data available for Greece.
Source: Eurostat survey on ICT usage and e-commerce in enterprises.

Data analytics

Data analytics involves examining datasets to extract meaningful insights and draw conclusions, often with the support of specialised software and systems (Urzì Brancati et al., 2022). Data analytics is typically categorised into three types: descriptive, predictive and prescriptive analytics. Descriptive analytics focuses on analysing past data to enhance understanding of previous events. Employing more advanced methodologies, predictive analytics identifies patterns within data to forecast future trends, and prescriptive analytics evaluates current data to support automated decision-making processes.

Data analytics is relatively widely used in large enterprises: two thirds of these companies use it (Figure 8). However, in SMEs this proportion is much smaller, with just 24 % employing data analytics. Medium-sized companies are, unsurprisingly, more likely to use this method (44 %) than small enterprises (21 %).

Most SMEs that perform data analytics do so on data from transaction records, such as sales details or payment records (20 %), or on customer-related data such as purchasing information, location, preferences, customer reviews and searches (14 %). Performing data analytics on other data sources is less common but such sources include social media (including enterprises' own social media profiles (9 %)), web data (8 %), government authorities' open data (6 %) and data from portable devices or vehicles (5 %).

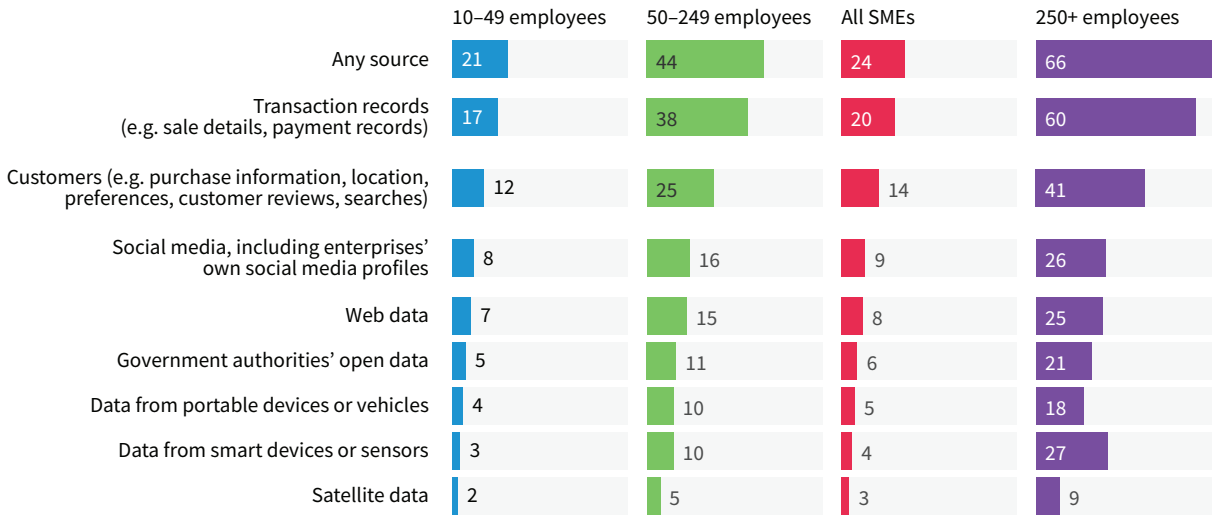
Interestingly, Croatia has the highest proportion of SMEs (41 %) that perform data analytics, followed by the Netherlands (37 %), Denmark (36 %) and Belgium (34 %). The use of data analytics is least common in SMEs in Norway (7 %), Slovenia and Austria (both 14 %). This is notable given that Croatia is not typically seen as one of the EU's digital frontrunners, suggesting that other factors, such as specific industry needs or local initiatives, may be effectively encouraging data-driven practices among their SMEs.

AI adoption is higher among large enterprises and in northern European countries, but survey respondents may have an unclear understanding of AI. The diffusion of generative AI tools makes it hard to separate hype from reality.

Artificial intelligence

AI has given rise to unprecedented hype in recent years, especially since the launch of OpenAI's ChatGPT. However, the use of AI remains largely experimental or nascent, especially in smaller enterprises that may lack the resources to fully implement or integrate it into work and business processes. Enterprises – typically larger in size – that have been mastering digital technologies for some time, particularly those with expertise in cloud computing, data analytics, big data and the Internet of Things, are well positioned to leverage AI in the developing wave of innovation, due to the natural complementarity between these technologies. As reported by the national experts

Figure 8: Data sources for data analytics in enterprises by size class, EU-27, 2024 (%)



Note: All activities (except agriculture, forestry and fishing, and mining and quarrying), without financial sector.
Source: Eurostat survey on ICT usage and e-commerce in enterprises in 2023.

Box 1: The challenge of measuring AI adoption in enterprises

As noted by several of the experts interviewed, determining the extent of AI usage in enterprises accurately is challenging due to inconsistent definitions and data collection methods, even within countries. AI encompasses a wide range of applications, and public perceptions often evolve with the emergence of tools like generative AI. While generative AI dominates current discussions, more traditional AI applications, such as machine-learning-based analytics, are widely used but are less frequently identified as AI. This challenge is exacerbated by discrepancies in statistical reporting, pointing to differing adoption rates, depending on how questions are framed.

A representative of the Czech Confederation of Industry urged caution when interpreting survey results on AI adoption, noting that, according to their own surveys, 60 % of companies claim to use AI – an assertion that does not reflect reality. Many of these surveys include tools like ChatGPT, which do not necessarily indicate a strategic integration of AI into company processes. The representative emphasised that the true impact of AI should be assessed within the context of a complex system or ecosystem, and only a limited number of companies currently meet this standard.

According to an Italian expert affiliated with a digital innovation hub, an alternative approach involves detailed digital maturity assessments, which can identify AI usage without explicitly labelling it as AI. Such assessments often reveal that many businesses unknowingly incorporate AI into broader digital tools or processes. This indicates that AI adoption may be more widespread than official statistics suggest.

An expert in Estonia pointed towards the differences between small and larger SMEs. Basic AI applications, including transcription, are used by many SMEs, while AI-powered data analysis and insight generation is much more common in large SMEs.

interviewed for this study, many SMEs have begun experimenting with generative AI tools, such as ChatGPT, to explore efficiency potential in routine operations, text production, editing and various other tasks. However, this reflects a relatively narrow application of AI, rather than leveraging AI as a broader catalyst for organisational change with the potential to significantly impact productivity.

According to Eurostat data, around 13 % of all SMEs adopted at least one AI technology in 2024, ranging from 11 % in small to 21 % in medium-sized companies. In large enterprises, 4 in 10 adopted at least one AI technology (41 %). See Box 1 for the difficulties encountered when measuring AI adoption in businesses.

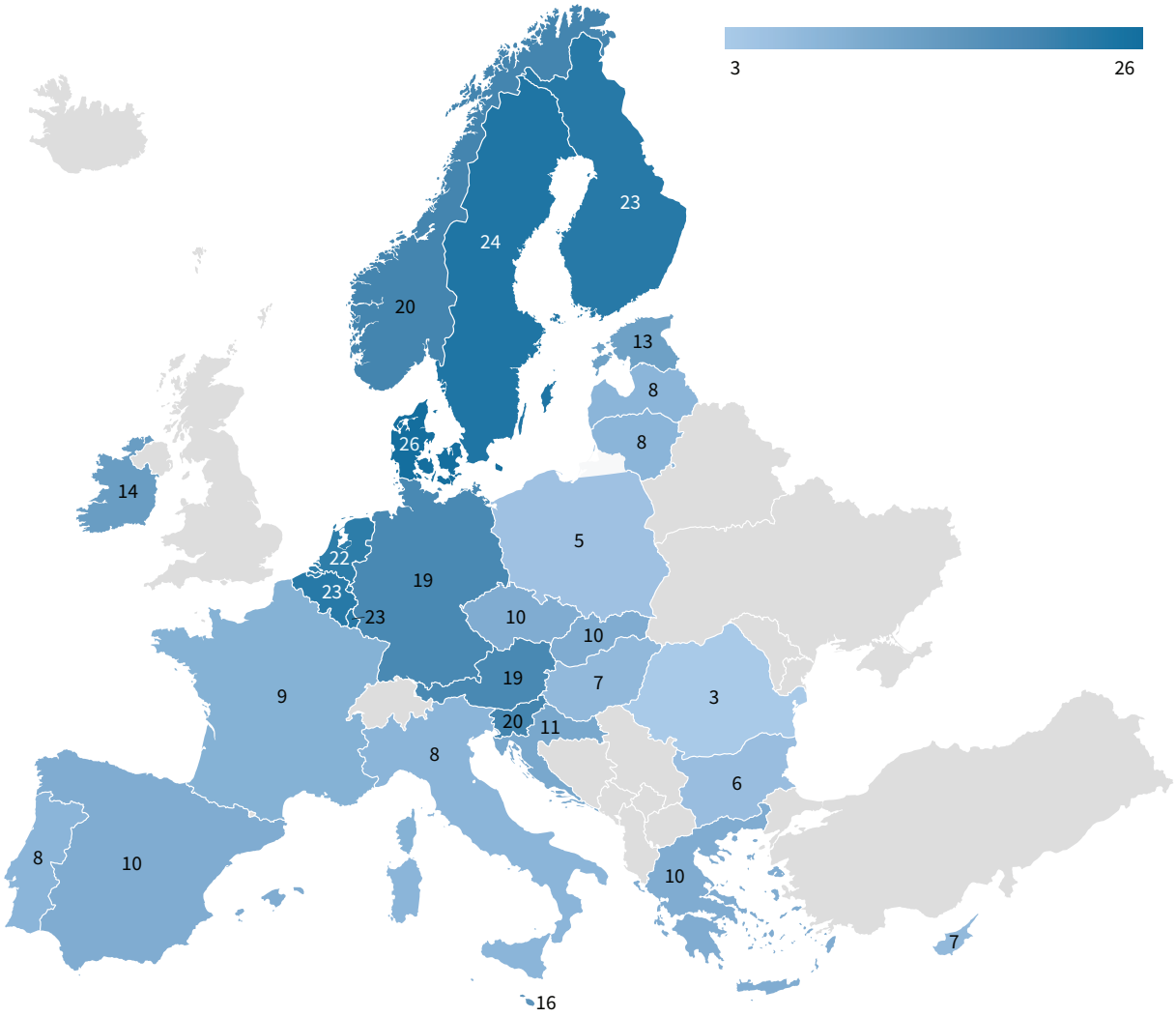
Figure 9 shows the percentages of SMEs in the Member States and Norway that utilise at least one AI technology. The top performers include Denmark (26 %), Sweden (24 %), Belgium, Finland, and Luxembourg (all 23 %), indicating a high adoption rate of AI technologies in these Member States. A notable geographical distribution can be observed, with a cluster of high adoption rates in the north, including in Denmark, Sweden and Finland, and another in the north-west, with Belgium, Luxembourg and the Netherlands (22 %).

Finland has emerged as a leader in AI adoption; the national experts interviewed expected continued growth, particularly among larger enterprises. Conversely, the national experts interviewed for **Sweden** noted a degree of scepticism among business owners, driven by concerns over cybercrime and regulatory burdens associated with AI governance. The experts interviewed for **the Netherlands** elaborated on the factors driving SMEs' strong performance in this area. These include a highly digitalised national economy and a society that fosters a supportive environment for SMEs, a robust digital infrastructure with extensive high-speed broadband and 5G coverage enabling seamless digital adoption, comprehensive digital strategies and policies that accelerate business and public sector digital transformation, and the country's high level of digital literacy.

Despite the Netherlands' high AI adoption rate, a survey carried out by Visma in 2023 found that only 9 % of respondents had extensive knowledge of AI, 38 % had no knowledge at all and just over half responded that they knew very little (Visma, 2024). At management level, AI remains a low priority, with only 16 % of survey respondents stating that AI usage is high on their organisation's agenda and another 16 % believing there is sufficient knowledge about AI's potential within their organisation.

In **Belgium**, the adoption of AI among SMEs is above the EU-27 average. However, the expert interviewed emphasised the need to distinguish between generative AI and more advanced technologies, such as deep learning. While many SMEs are experimenting with generative AI, particularly through accessible tools like ChatGPT, the expert noted that the actual outcomes and efficiency gains from these tools remain uncertain. According to this expert, more structured and integrated use of AI is often constrained by limited financial resources, lack of technical expertise and restricted access to quality data. A noticeable lag in the adoption of deep-learning applications was also

Figure 9: SMEs using at least one AI technology, EU-27 and Norway, 2024 (%)



Notes: All activities (except agriculture, forestry and fishing, and mining and quarrying), without financial sector; enterprises with 10–249 employees only.
Source: Eurostat survey on ICT usage and e-commerce in enterprises.

highlighted. Given their size and organisational structure, SMEs often lack the capacity to advance AI adoption independently. To address this, the expert pointed to several initiatives aimed at fostering collaboration between SMEs and Belgian IT firms developing AI solutions, identifying these partnerships as good practice for supporting AI integration in smaller enterprises.

Several Member States, particularly in south-eastern and eastern Europe, have lower AI adoption rates. In **Bulgaria**, the national experts cited a lack of investment in digitalisation, a shortage of IT experts and a prevailing perception that AI is only suitable for large corporations. In **Poland**, the experts pointed to a lack of data access, insufficient digital skills and high costs as barriers to AI adoption. **Romania**'s AI adoption rate is one of the lowest in the EU, with SMEs in the IT and consultancy sectors serving as rare exceptions. Based on the experts' opinions, the lack of digital skills, financial constraints and cybersecurity concerns contribute to the slow pace of digital transformation. In **Estonia**, a Member State long renowned for being a forerunner in ICT, an expert interviewed highlighted that awareness raising and support programmes are needed to encourage the take-up of AI in smaller SMEs.

Member States in southern and south-western Europe, including **France**, **Greece**, **Italy**, **Portugal** and **Spain**, tend to have lower adoption rates. Among the factors behind Italy's low level of AI adoption – as explained by the experts interviewed – is general hesitancy among SMEs, driven by an unclear understanding of AI's benefits and the complexities of its integration into existing business models. While interest in AI is high, investment is still minimal. AI is easiest to implement in sales and marketing. It proves more challenging in areas linked to production, manufacturing and core business processes.

Beyond official statistics, expert opinions suggest that AI adoption in SMEs in **Portugal** is progressing, driven by a few frontrunners leading the way. In the services

sector, there is a growing adoption of AI, particularly for automating routine tasks and administrative processes, as well as enhancing data analytics – helping SMEs save time and resources. Despite its potential benefits, AI implementation in SMEs faces challenges such as high initial costs, limited knowledge and specialised talent and concerns about data security and privacy.

For **France**, the experts interviewed provided a nuanced perspective beyond the numerical data to explain the low level of AI adoption by SMEs. The primary challenge lies in SMEs' willingness to reassess and adapt their business models. The digital transition is not just about acquiring technology; it requires a fundamental shift in organisational operations, clear identification of needs and an openness to internal change. Another key factor is the need to demystify AI. If AI remains a niche topic understood only by a select few within a company, restructuring becomes significantly more difficult. Successful adoption depends on making AI a shared objective across the organisation, ensuring that all employees understand and engage with its potential. Experts also highlighted a shortage of talent in data-related fields, such as data science and cybersecurity, which further complicates adoption. Industry-specific differences also play a role; for example, very small businesses in construction are less inclined to digitalise, whereas service companies see more immediate benefits.

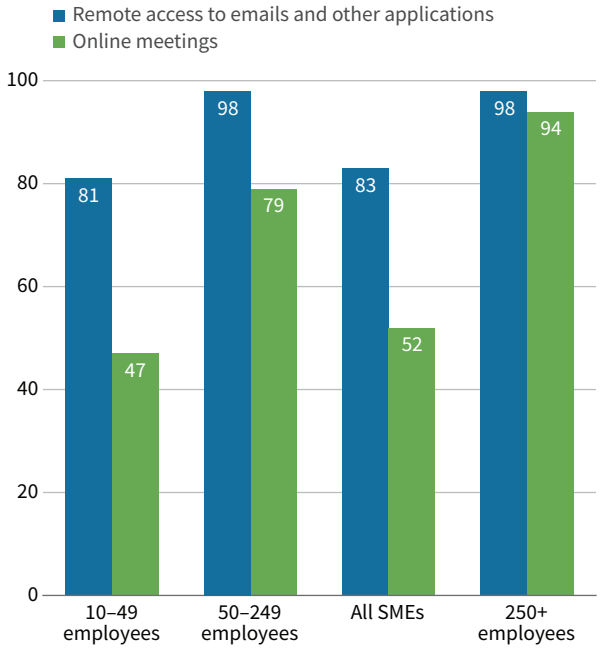
In **Greece**, experts observed that SMEs generally exhibit low levels of innovation and digital maturity and that major barriers are the lack of funds and limited awareness of technological advancements. Most traditional small businesses focus their digital investments on tools that provide immediate cost savings or are mandated by regulations, such as point-of-sale systems (a point-of-sale system is a combination of hardware and software that enables businesses to process sales transactions, manage inventory and streamline operations). As a result, technological innovation remains limited, with digital transformation efforts primarily concentrated on basic infrastructure rather than AI-driven advancements. Despite these challenges, there are positive developments, particularly outside traditional sectors. Greece has a growing number of technology-intensive start-ups, such as Viva Wallet and Innoetics, which have attracted significant investment and, in some cases, been acquired by foreign companies. Furthermore, certain medium-sized manufacturers are already utilising AI-driven sensors, and AI is expected to play a greater role in logistics, supply chains and demand forecasting in the near future. One promising development in the Greek AI domain is the creation of Meltemi, a Greek-language large language model (LLM) developed by the Athena Research Center, which is expected to drive further AI advancements in relevant industries.

Remote access and online meetings

The COVID-19 pandemic accelerated the adoption of remote access technologies, making them the new standard for internal document sharing, application access and email communication. Online meetings and video conferences have also become an integral part of the remote work environment. The widespread adoption of these technologies has been crucial to the successful implementation of remote and telework arrangements.

As of 2024, a significant majority of SMEs provide remote access to the enterprise's email systems, documents and applications, with 83 % adoption across the board (Figure 10). This figure varies across different business sizes, ranging from 81 % in small businesses to 98 % in medium-sized businesses. Large organisations have almost universal adoption of remote access with virtually no exceptions. Across Member States, the proportion of SMEs with remote access fluctuates; Romania has the lowest adoption rate at 78 %, while Finland has the highest at 98 %.

Figure 10: Remote access and online meetings in enterprises by size class, EU-27, 2024 (%)



Note: All activities (except agriculture, forestry and fishing, and mining and quarrying), without financial sector.
Source: Eurostat survey on ICT usage and e-commerce in enterprises.

Interestingly, the adoption of online meetings is less widespread among SMEs; only 52 % have adopted this practice. However, significant differences exist across different business size classes. While 47 % of small businesses use online meetings, this figure rises to 79 % for medium-sized businesses and 94 % for large businesses. Again, a north–east divide can be observed

regarding adoption across Europe, with more than 70 % of SMEs employing online meetings in Denmark, Sweden, Norway and Finland compared with less than 30 % in Bulgaria, Hungary, Latvia, Romania and Slovakia.

Social media use and website functionalities

Data on the purposes of social media use by enterprises reveal a range of uses across different business activities. The primary purpose of social media use is to develop the enterprise's image or market products, with 50 % of SMEs overall and 76 % of larger enterprises (those with 250 employees or more) using social media for this purpose (Figure 11). Customer engagement is also an important aspect of social media use, with 30 % of SMEs using social media to obtain or respond to customer opinions, reviews and questions and 13 % involving customers in the development or innovation of goods or services.

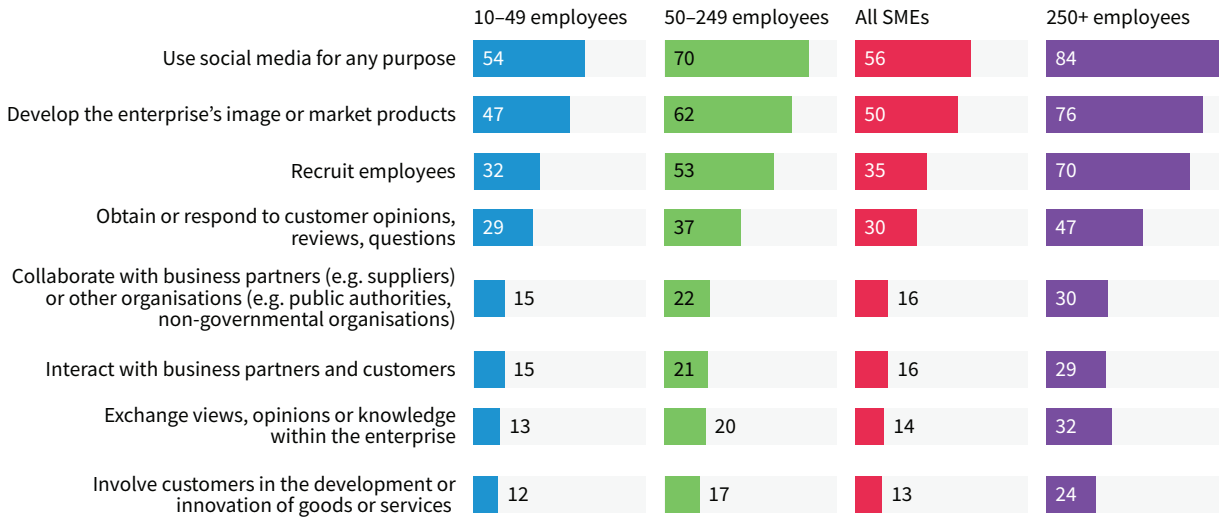
SMEs' social media use has more than doubled across the EU, but can it serve as a gateway to broader digital transformation in countries lagging behind?

Social media is also used for internal and external collaboration, with 16 % of SMEs using it to collaborate with business partners or other organisations and 14 % exchanging views, opinions or knowledge within the enterprise. Furthermore, 16 % of SMEs use social media specifically to interact with both business partners and customers. In addition, 35 % of SMEs use social media for recruitment purposes. This figure increases to 70 % for larger enterprises with 250 or more employees.

Overall, 56 % of SMEs use social media for any of these purposes; larger enterprises are more likely to do so (84 %).

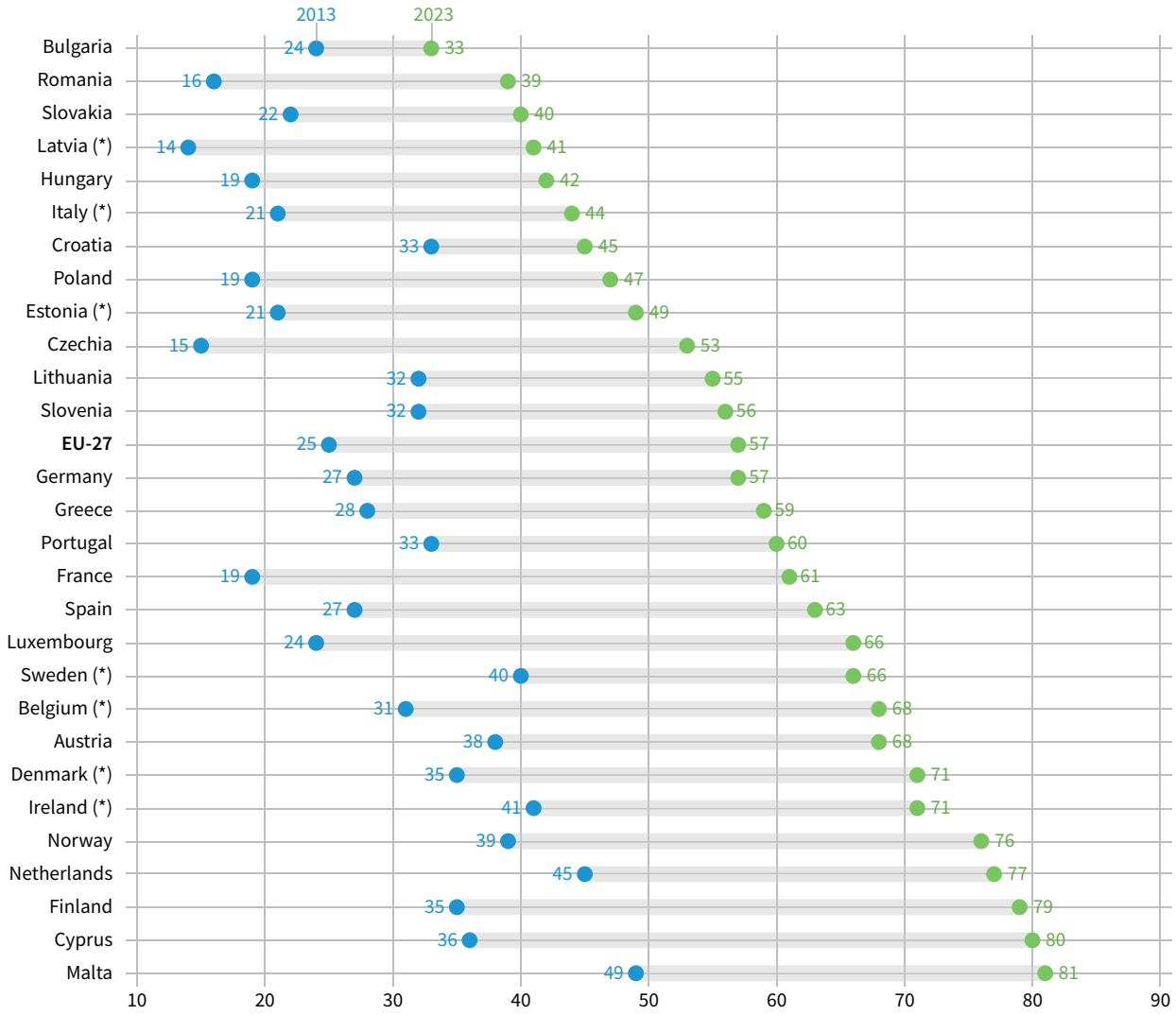
Figure 12, displaying SMEs' use of social media for any purpose over time, reveals a significant increase in adoption across the EU-27 between 2013 and 2023. On average, the percentage of SMEs using social media rose from 25 % in 2013 to 57 % a decade later. Notably, some Member States demonstrated exceptional growth, with Finland increasing from 35 % to 79 %, Cyprus from 36 % to 80 % and Malta from 49 % to 81 %. Other countries, such as Ireland, Norway and the Netherlands, also showed significant increases, with adoption rates ranging from 71 % to 77 % in 2023. In contrast, in some Member States, including Bulgaria, Slovakia and Hungary, social media use is not widespread among SMEs, with adoption rates below 45 % in 2023. Overall, the data suggest that social media use has become increasingly important for SMEs across the EU, with many Member States making significant strides in adoption over the past decade.

Figure 11: Various purposes of social media use in enterprises by size class, EU-27, 2023 (%)



Note: All activities (except agriculture, forestry and fishing, and mining and quarrying), without financial sector.
Source: Eurostat survey on ICT usage and e-commerce in enterprises.

Figure 12: Use of social media for any purpose in SMEs, EU-27 and Norway, 2013 and 2023 (%)



Notes: All activities (except agriculture, forestry and fishing, and mining and quarrying), without financial sector; enterprises with 10–249 employees only. (*) Denotes data from 2019.
Source: Eurostat survey on ICT usage and e-commerce in enterprises.

Other ICT channels used to interact with customers and clients include chat services, where an agent, virtual agent or chatbot replies to queries; applications (apps) provided by the enterprise; and traditional websites, available in various languages, with varying functionalities (e.g. ordering, reserving, booking, submitting complaints, order tracking and advertising). Overall, 78 % of SMEs have a website, 9 % provide a chat service ([7]) and 8 % offer a mobile app to their clients ([8]).

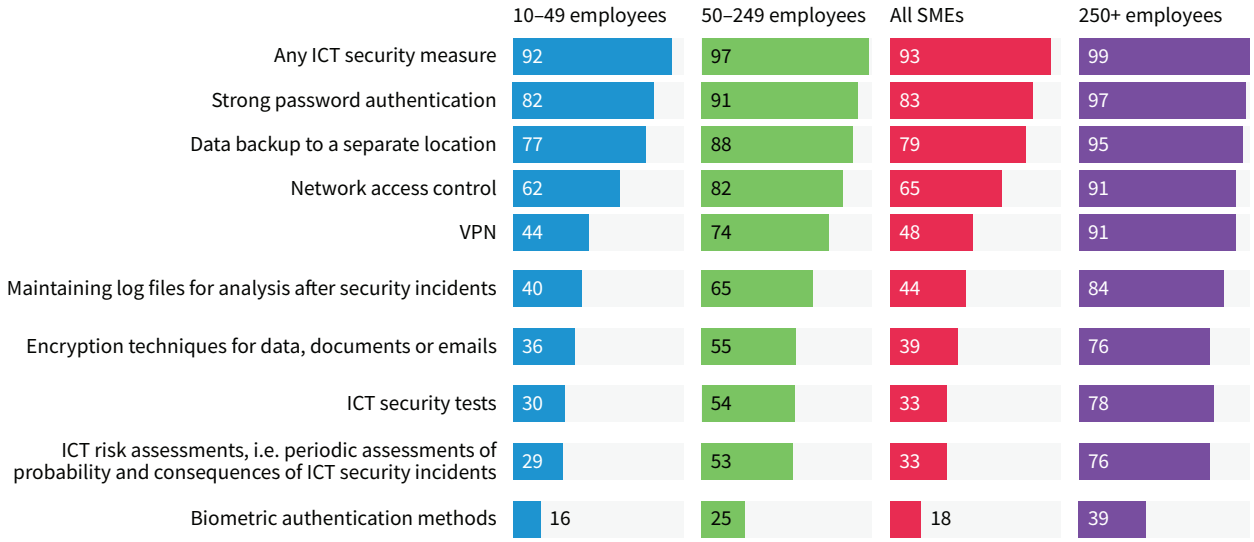
ICT security

Most SMEs have a strong foundation in basic security practices, with the majority implementing strong password authentication (83 %) and data backup to a separate location (79 %), as shown in Figure 13. There is little variation between smaller and larger organisations in this regard, as ICT security is considered a key factor in business safety and continuity. Two thirds of SMEs use network access controls, 48 % have adopted virtual private networks (VPNs) and 44 % maintain log files for analysis after security incidents. Lower adoption rates are reported for measures such as biometric authentication, ICT risk assessment and encryption techniques. Overall, the data suggest that while there is room for improvement, most enterprises across all size classes recognise the importance of ICT security, with 92 % to 97 % of SMEs and 99 % of large enterprises employing at least one security measure.

([7]) As per Eurostat's ICT survey 2021.

([8]) As per Eurostat's ICT survey 2023.

Figure 13: ICT security measures in enterprises by size class, EU-27, 2024 (%)



Note: All activities (except agriculture, forestry and fishing, and mining and quarrying), without financial sector.
Source: Eurostat survey on ICT usage and e-commerce in enterprises.

Most SMEs (76 %) and almost all large businesses (97 %) used at least three ICT security measures in 2024, which is a key DESI indicator. More than 85 % of SMEs in four Member States used more than three ICT measures, namely Finland (92 %), Denmark (90 %), Germany and the Netherlands (both 87 %). Only a small proportion of SMEs (5 %) implement all the ICT security measures discussed, compared with a quarter of large companies with 250 or more employees.

Most SMEs have basic ICT security in place but rely on outsourcing and lack advanced measures.

ICT security policy is another area where enterprise size plays a significant role. While only 30 % of small organisations (those with 10–49 employees) have documented measures, practices or procedures for ICT security (DESI indicator), this rises to 56 % for medium-sized companies and 81 % for large companies, where such documentation appears to be the norm. Even in the absence of formal documentation, companies generally ensure that their staff are made aware of their ICT security obligations. This is the case for 59 % of SMEs and 92 % of large companies.

According to ECS data for 2019, SMEs are more likely to outsource their ICT security activities, whereas large companies typically adopt a mixed approach, relying primarily on in-house staff to manage these tasks. Overall, ICT security incidents were reported more often by larger organisations than by SMEs. In 2024, 21 % of the latter reported some kind of ICT security incident leading to the unavailability of ICT services, destruction or corruption of data or the disclosure of confidential data. This was, however, more often the case in medium-sized (27 %) or large (38 %) enterprises than small enterprises.

Impact of the COVID-19 pandemic on SME digitalisation

The COVID-19 pandemic had a significant impact on SMEs in the EU, with varying effects based on their pre-crisis digitalisation levels. The experts consulted for this study described the pandemic as a catalyst or wake-up call for digital transformation, accelerating investments in digital technologies. However, differences in adoption rates persist between basic and advanced technologies as well as between manufacturing and services sectors.

The pandemic acted as a catalyst for change – up to a point. Many experts believe it triggered a temporary surge in digital technology usage but did not necessarily lead to lasting cultural or strategic transformation.

SMEs rapidly adopted digital technologies, including e-commerce platforms, remote working tools and digital supply chain management, to ensure business

continuity. Empirical research supports this, with a panel data analysis of 12 179 European SMEs showing that digitalisation mitigated the negative financial impact of COVID-19 (Savvakis et al., 2024). A qualitative study of 50 SMEs found that digital transformation strategies were crucial for resilience during the crisis (Hiziroglu et al., 2024).

However, expert opinions differed on the depth and permanence of the digital transformation. Some viewed the pandemic as a game-changer, while others argued that it did not result in a lasting shift in business models. For instance, in Italy the digitalisation triggered by the pandemic was seen by most experts as superficial, as SMEs reverted to pre-pandemic practices once the crisis subsided.

According to Swedish experts, while the COVID-19 pandemic accelerated digitalisation significantly, compressing five to six years of progress into just two years, it did not eliminate the underlying structural barriers to full digital transformation or result in widespread changes to business models. The experts interviewed emphasised that skills, know-how and strategic vision remain major obstacles to deeper digital transformation.

Conversely, experts in Finland highlighted that digitalisation among SMEs not only accelerated significantly during the COVID-19 pandemic – particularly in areas such as customer engagement, marketing and information systems – but also brought lasting changes, prompting the emergence of new digital business models (e.g. digital training facilitation) and leading to the widespread adoption of remote recruitment and online learning platforms. While Finland outperforms much of the EU in digital readiness, experts warned that the country's progress has somewhat plateaued and that EU-level targets may be too modest for Finland's capabilities and ambitions.

In response to the challenges faced by businesses during and after the pandemic, the EU directed funding towards digitalisation and emerging technologies, reinforcing its commitment to digital transformation through the adoption of its Digital Compass in 2021. The plan sets ambitious targets for 2030, focusing on scaling up digital technologies among SMEs. However, SMEs continue to face challenges in accessing financial support and implementing upskilling and reskilling programmes, with research suggesting that aid did not always have the desired effect (Welter and Levering, 2021). The experts emphasised that difficulties in accessing funding and fragmented financial support remain major obstacles to digital adoption.

Barriers to investment and digitalisation

In the interviews conducted with the national experts, financial constraints emerged as a major barrier to digitalisation, particularly in Member States such as **Bulgaria**, **Greece**, **Hungary**, **Latvia**, **Poland, Portugal** and **Slovenia**, where SMEs reportedly struggle to secure the resources necessary to advance their digital transformation. For instance, although many government supports exist, these are not always sufficient for SMEs to undertake a deep digital transformation. The identification of financial constraints as a key challenge to SME digitalisation appears to be at odds with the wide availability of publicly financed support measures intended to address this very issue (see Chapters 3 and 4 for an overview of available support measures).

Insights about obstacles to investments by firm size can also be gleaned from the 2024 European Investment Bank Group Investment Survey, which identifies the key obstacles firms encounter when making investment decisions (Table 4). The survey data highlight

Table 4: Obstacles to investments in enterprises by size class EU-27, 2024 (%)

	All EU firms	SMEs	250+ employees
Demand for products and services	50	49	51
Availability of skilled staff	77	75	79
Energy costs	77	74	79
Digital infrastructure	41	39	44
Labour regulations	62	60	64
Business regulations	66	63	69
Transport infrastructure	45	43	46
Finance availability	45	47	43
Uncertainty about the future	79	79	79

Notes: The table reports respondents' answers to the question: 'Thinking about your investment activities, to what extent is each of the following an obstacle? Is it a major obstacle, a minor obstacle or not an obstacle at all?'. The reported percentages combine minor and major obstacles into one category. The survey sample comprised approximately 13 000 firms across all Member States.
Source: European Investment Bank (2024).

uncertainty about the future, skills shortages and energy costs as the most significant barriers to investment across the EU. Larger firms tend to report slightly greater concerns about regulatory and infrastructure-related issues, while SMEs face more difficulties in accessing finance.

The survey also found that 86 % of EU firms employ staff to handle regulatory compliance, with SMEs being particularly burdened due to their limited resources; 28 % of SMEs dedicate over 10 % of their workforce to regulatory assessment and compliance. Despite this, the reported perception of business and labour regulations as an investment obstacle is slightly lower among SMEs (63 % and 60 %, respectively) than among large firms (69 % and 64 %, respectively). This suggests that while SMEs struggle more with ongoing compliance costs, large firms may feel the impact of regulatory complexity and constraints on expansion more acutely when making investment decisions. Thus, regulatory burdens manifest in different ways depending on firm size – for SMEs, they are an operational challenge, whereas for large firms, they are an investment barrier.

The experts consulted call for tailored support to accelerate SME digitalisation, simplified administrative procedures for accessing support and funding, greater awareness of the benefits of technology and sustained investment in training.

With specific regard to investment in digitalisation, the national experts interviewed in this study highlighted the administrative burden and the complexity of accessing public funding as additional significant challenges, particularly in **Belgium**, **Croatia**, **Italy**, **Luxembourg** and **the Netherlands**. These difficulties are exacerbated by a fragmented system of support programmes, complex regulatory frameworks and a lack of clarity regarding available measures. To improve the uptake of support for digitalisation, the experts called for less red tape, simplified administrative procedures, streamlined support mechanisms and rationalised reporting requirements. In **Slovenia**, according to the expert consulted, securing funding beyond public support is difficult, as venture capital markets typically prefer highly innovative projects, which do not align with the more basic digitalisation needs of many SMEs.

The shortage of digital skills, described by some as the most pressing challenge, was cited by experts in several countries. This includes a lack of ICT specialists, limited digital literacy and inadequate access to training and qualification opportunities. In **Austria**, **Croatia**, **Cyprus**, **Czechia**, **Denmark**, **Latvia**, **Norway** and **Spain**, experts emphasised the importance of targeted training initiatives and greater public investment to build digital competencies. Bridging these skills gaps is critical not only for fostering innovation and digital adoption but also for enabling SMEs to attract and retain skilled workers in a competitive labour market.

This lack of digital skills is also closely linked to resistance to change and limited awareness of the benefits of digitalisation, particularly among SME leaders and business owners. This creates a self-reinforcing cycle that further delays the adoption of new technologies. National experts in countries such as **Belgium**, **France**, **Greece** and **Romania** identified these issues as major barriers, preventing SMEs from fully understanding both the opportunities and the challenges associated with digital transformation. An expert from **Estonia** referred to this challenge as a 'generational mindset divide'. To counter this, the experts interviewed recommended awareness-raising initiatives and targeted support to help SMEs recognise the value of digital technologies.

Regarding digital infrastructure, expert interviews – particularly in **Ireland** and **the Netherlands** – pointed to a pressing need to prioritise cybersecurity. Strengthening SMEs' cybersecurity capabilities through targeted support is essential to ensure that they can protect themselves against growing cyber threats and operate safely in an increasingly digital environment. Countries aiming to strengthen their cybersecurity capabilities could look to **Luxembourg** as a model. Luxembourg established a National Cybersecurity Competence Centre – featuring an observatory and market study focused on SMEs – and launched a diagnostic tool that offers SMEs an overview of the state of play of their cybersecurity with tailored recommendations for improvement.

Summary

- The EU average rate of basic digital intensity in SMEs stands at 73 %, with Denmark and Finland being the only Member States to have already reached the EU target of 90 % of SMEs achieving at least the basic level of digital intensity. A geographical divide is evident, with northern and western European countries (particularly Denmark, Finland and Sweden) exhibiting higher rates of basic digital intensity than their southern and eastern counterparts. The national experts interviewed for this study highlighted sectoral differences within countries and the greater difficulties faced by SMEs that operate outside global supply chains or multinational networks.
- The percentage of SMEs participating in e-commerce increased from 13 % to 20 % between 2010 and 2024, with larger SMEs (those with 50–249 employees) showing a higher level of adoption compared with smaller ones (those with 10–49 employees). There is a mixed geographical pattern, with Denmark (38 %), Ireland and Lithuania (both 35 %) leading in e-commerce adoption, while Luxembourg lags significantly behind with 8 %, followed by Bulgaria, Romania, Poland, France and Slovakia with proportions below 15 %. The digital skills gap is a significant barrier to SME e-commerce adoption, and this should motivate governments and organisations to invest in initiatives that upskill the workforce and encourage digital adoption among SMEs to help them capitalise on e-commerce opportunities.
- The adoption of data analytics and AI technologies is influenced by company size and digital maturity. While large enterprises and some Member States, such as Belgium, Denmark, Finland, the Netherlands and Sweden, are leading the way in adopting AI, other Member States, particularly those in southern and eastern Europe, are lagging behind. SMEs in these Member States face a mix of challenges such as limited resources, a lack of digital skills, cybersecurity concerns and a lack of understanding of the technology.
- As of 2024, 81 % of SMEs provide remote access to enterprise email systems, documents and applications, with adoption rates varying across different business sizes and Member States. SMEs' use of social media increased significantly across the EU-27 between 2013 and 2023, with the average adoption rate rising from 25 % to 57 %. Member States such as Cyprus, Finland and Malta have demonstrated exceptional growth in social media adoption. Regarding ICT security measures, most SMEs have a strong foundation in basic security practices, with the majority implementing strong password authentication (83 %) and data backup to a separate location (79 %). However, there is room for improvement regarding more advanced security measures.
- The experts interviewed in this study acknowledged that the COVID-19 pandemic accelerated digital adoption among SMEs. Opinions diverged, however, on the extent to which digitalisation prompted by the pandemic was transformative and a game-changer. It was often the case that SMEs adopted digital tools as a short-term response rather than as part of a strategic shift, with many businesses reverting to pre-pandemic practices once the immediate crisis subsided. There was consensus among the experts interviewed that true digital transformation requires more than just external pressure – it requires sustained cultural and structural change supported by long-term investment, guidance and expertise.
- National experts identified several barriers to digitalisation in SMEs. To help overcome these, they highlighted the need for tailored support measures, such as targeted funding schemes and training programmes, that meet SMEs' specific needs. Simplifying administrative procedures was identified as crucial for improving access to funding. Training efforts should prioritise both digital literacy and advanced technical skills. These should be coupled with broader efforts to foster a culture of innovation and raise awareness of the benefits of digital technologies. The experts consulted for this study also stressed the importance of enhancing digital infrastructure and strengthening cybersecurity.

2 European and national policy frameworks

EU policy strategies and initiatives on digitalisation

SMEs have long been a focal point of EU policymaking, with a decisive milestone being the adoption of the Small Business Act (SBA) in 2008. Embedding the 'Think Small First' principle, the SBA laid the groundwork for SME-oriented policy by urging institutions to consider the specific needs and challenges of small businesses in all legislation and at every stage of policymaking. This principle has helped foster a more balanced regulatory environment that avoids disproportionately burdening smaller enterprises (European Commission, 2008).

The 'Think Small First' principle continues to guide EU policymaking and is reflected in more recent strategies such as the New Industrial Strategy for Europe, which outlines how the twin transition – green and digital – can shape Europe's industrial future in alignment with the European Green Deal (European Commission, 2020a). In parallel, the SME Strategy for a Sustainable and Digital Europe was launched to directly support SMEs during this transition. Recognising the diversity of SMEs in the EU, the strategy outlines tailored actions built around three pillars – capacity building, regulatory simplification and improved access to finance – all aimed at fostering an environment where SMEs can grow and compete within the single market and globally (European Commission, 2020b).

However, both strategies preceded the COVID-19 pandemic, which brought substantial disruption and accelerated the need for resilience and transformation. In response to the new arising challenges, the Commission issued an update in May 2021 – *Updating the 2020 New Industrial Strategy: Building a stronger single market for Europe's recovery* (European Commission, 2021). This update emphasised the advantages of early adoption of green and digital technologies, noting that companies already engaged in these areas weathered the crisis more effectively.

Building on this foundation, the EU has introduced more targeted and forward-looking initiatives in recent years, most notably the Digital Compass and the Digital Decade policy programme 2030. SMEs are a central focus of both policy initiatives, which also recognise their key role in strengthening Europe's economic resilience, fostering growth and enhancing competitiveness.

The Digital Compass, presented in March 2021, sets out a strategic vision for Europe's digital future by 2030. It is structured around four key pillars: digital skills, digital infrastructures, digital transformation of businesses and the digitalisation of public services. This vision was made operational with the Digital Decade policy programme 2030, which translates the Digital Compass into a measurable framework with concrete targets. One of its headline goals is for over 90 % of SMEs to achieve at least the basic level of digital intensity by 2030 (European Union, 2022a).

To support these goals, the programme introduces a comprehensive governance framework, including an annual cooperation cycle between the European Commission and Member States. This includes structured monitoring using the DESI, annual state of the Digital Decade reports and national strategic roadmaps (updated every two years) that outline the measures Member States will take, many of which specifically address SME needs in digital transformation.

With the new Commission taking office in 2025, new priorities have been set to ensure that the environment in which EU businesses operate facilitates their competitiveness and success. The economic visions outlined by Draghi and Letta in their respective reports have been embraced and integrated into the new policy framework. Their insights now underpin the Competitiveness Compass for the EU, which reaffirms the critical importance of fully leveraging the single market to mitigate the risks of deindustrialisation and economic hardship. In line with the structural approach of the Draghi report, it identifies three key transformational imperatives: closing the innovation gap, advancing joint actions on decarbonisation and competitiveness, and reducing excessive dependencies while enhancing security (European Commission, 2025a). These priorities are complemented by a series of horizontal enablers. These include simplifying the administrative environment, with targets to reduce the administrative burden by at least 25 % for all firms and by at least 35 % for SMEs. Efforts are also under way to lower barriers within the single market by making standard-setting processes faster and more accessible, particularly for SMEs and start-ups. Other enablers include the promotion of skills and quality jobs, better policy coordination and the development of new financing mechanisms, all aimed at enhancing competitiveness across sectors.

The Competitiveness Compass for the EU also highlights the crucial role of human capital in sustaining the EU's competitiveness. Persistent labour and skills shortages continue to negatively affect businesses across the EU, with SMEs being the most impacted. To better align skills with labour market demands, the compass envisages investments in adult and lifelong learning, upskilling and reskilling initiatives, and quality jobs, as well as efforts to attract foreign talent and facilitate the recognition of diverse training qualifications. These measures aim to ensure greater workforce mobility across tasks, occupations and jobs (European Commission, 2025a).

Funding instruments

Following the COVID-19 pandemic, the European Commission launched broad recovery initiatives such as NextGenerationEU and REPowerEU to stimulate economic recovery, drive sustainable growth and support the green and digital transition. NextGenerationEU is a flagship recovery instrument, funding projects that aim to restore employment, boost job creation and assist businesses most affected by the crisis. Beyond economic repair, it supports research, strengthens crisis response mechanisms, reinforces resilience and ensures that the transition to a climate-neutral economy remains a central EU priority (European Union, 2020).

The Recovery and Resilience Facility (RRF) is the primary mechanism through which these funds are distributed. With a total budget of EUR 650 billion, consisting of EUR 359 billion in grants and EUR 291 billion in loans, the RRF provides financial support to Member States based on results and the implementation of reforms identified in the European Semester. It targets six key areas for recovery: the green transition, digital transformation, sustainable and inclusive growth (including a more supportive environment for SMEs), social and territorial cohesion, resilience, and policies for the next generation. To access the funds, Member States must submit detailed reform and investment plans, outlining how their measures contribute to these six pillars, while also setting out milestones and monitoring processes (European Union, 2021a).

Recognising the importance of the twin transition, the RRF establishes clear minimum spending requirements: at least 37 % of each Member State's allocation must support climate action and environmental sustainability. A further minimum of 20 % must be dedicated to digital transformation, directly advancing the objectives of the Digital Compass and the Digital Decade 2030 targets.

In addition to the RRF, several other EU programmes support recovery and digital transformation efforts. The Digital Europe Programme (2021–2027) plays a critical role in advancing the EU's digital economy, industry and society. It aims to close digital gaps across Member States and increase the EU's competitiveness. The programme focuses on five priority areas: high-performance computing, AI, cybersecurity, digital skills and digital interoperability (European Union, 2021b).

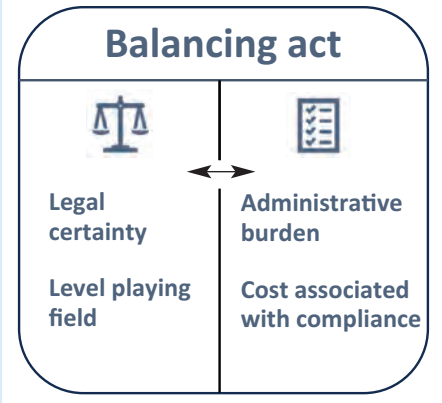
Complementing these programmes, Horizon Europe (successor to Horizon 2020) supports research and innovation investments, strengthening the EU's scientific and technological base. Horizon Europe promotes the development and uptake of innovative solutions and helps SMEs access cutting-edge technologies, fostering cross-sector innovation and attracting global talent to the EU (European Union, 2021c).

The variety of available funding mechanisms reflects a coordinated and comprehensive EU strategy to recover from the pandemic, strengthen economic resilience and accelerate the twin transition, ensuring that all regions, sectors and SMEs can participate in and benefit from the EU's sustainable and digital future. Box 2 outlines the role played by various EU regulations in supporting digitalisation in general.

Box 2: The role of EU regulatory frameworks

In the EU, landmark regulations like the Digital Markets Act (DMA) (Regulation (EU) 2022/1925) and the Digital Services Act (DSA) (Regulation (EU) 2022/2065), which are directly applicable in all Member States, help create a more level playing field for SMEs in the digital economy. This ensures that SMEs can innovate and scale up without being overwhelmed by unchecked platform dominance or opaque data practices, ultimately promoting a more competitive and fair market.

The DMA, which complements existing EU competition laws that remain fully in force, is one of the first regulatory measures to comprehensively address the market power of major digital companies. It is designed to make the digital sector's markets fairer and more competitive by setting out clear, objective criteria to



identify gatekeepers – large digital platforms that offer core platform services, such as online search engines, app stores and messenger services. These gatekeepers must adhere to the obligations and prohibitions outlined in the DMA. In this respect, the DMA can open up access to specific features of online markets for businesses (especially SMEs) that were previously restricted (European Union, 2022b).

The DSA is a parallel legislative framework to the DMA. It regulates digital services, particularly online platforms and intermediaries. The DSA establishes clear responsibilities for these platforms to prevent the dissemination of illegal content and protect fundamental rights. It mandates transparency regarding content moderation, advertising policies and algorithms, ensuring that platforms are accountable through regular reporting and cooperation with national authorities. The DSA offers several advantages for SMEs. By imposing stricter regulations on large platforms, the Act reduces the dominance of major players and allows smaller enterprises to compete more fairly. The increased transparency and accountability measures help mitigate anticompetitive practices, making it easier for SMEs to enter and thrive in the digital market. Furthermore, SMEs benefit from improved access to data, which can help them understand market trends and consumer behaviour better (European Union, 2022c).

Another important piece of legislation is the Cyber Resilience Act (Regulation (EU) 2024/2847), which represents both a compliance obligation and a strategic opportunity for SMEs. By introducing harmonised cybersecurity requirements across the EU, the Act helps reduce regulatory fragmentation and creates a level playing field, ensuring that all market players, including larger companies, are subject to the same standards. This is particularly beneficial for SMEs seeking to compete in the digital single market. However, the Act may also present challenges for SMEs, as many lack the in-house expertise or technical capacity to meet the new requirements. The costs associated with compliance, certification and the necessary technical upgrades could be especially burdensome for small enterprises and microenterprises. To mitigate these challenges, the Cyber Resilience Act includes specific provisions to ease the burden on SMEs. These include simplified procedures, practical guidance for implementation and access to EU-level support mechanisms and funding, particularly through programmes such as Digital Europe and Horizon Europe (European Union, 2024).

Other regulations, such as the General Data Protection Regulation (Regulation (EU) 2016/679) and, more recently, the AI Act (Regulation (EU) 2024/1689), also set a global benchmark for safeguarding fundamental rights online. While they raise compliance requirements, these frameworks offer legal clarity and help build consumer trust – benefits that are particularly advantageous for SMEs seeking to operate confidently and competitively in the digital economy (European Union, 2016).

The national experts interviewed for this study expressed both positive expectations and concerns, particularly regarding the implementation of procedures under the recent AI Act. This Act is anticipated to positively impact SMEs by fostering innovation and enhancing trust in AI technologies, thereby contributing to a safer, more reliable and inclusive AI ecosystem. These positive expectations were somewhat tempered by concerns that SMEs may struggle to comply with the regulations – particularly for high-risk AI systems – due to the significant time and financial resources required. However, the AI Act includes measures tailored to SMEs to support and simplify their compliance with the Act's product safety rules, such as exemptions from certain reporting requirements, simplified obligations when using AI-powered systems (e.g. priority access to regulatory sandboxes free of charge), reduced assessment fees proportional to company size, simplified documentation and tailored training [9].

[9] For more information, see 'Small businesses' guide to the AI Act' at https://artificialintelligenceact.eu/small-businesses-guide-to-the-ai-act/. A regulatory sandbox is a structured framework, established by a regulator, that allows businesses to test innovative products, services or business models in a controlled, real-world environment for a limited time under the regulator's supervision.

National alignment with EU policy frameworks

All Member States have developed national digital and AI strategies aligned with broader EU initiatives and guidelines. The RRF – through national recovery and resilience plans – plays a crucial role in supporting the implementation of these strategies by providing financial backing for reforms and investments that accelerate the digital transformation of businesses. A special report by the European Court of Auditors (ECA) assessing the use of RRF budgets and the implementation of digital components in national recovery and resilience plans found an insufficient focus on SMEs' specific digital needs (ECA, 2025). More generally, the ECA identified several weaknesses in the use of the RRF to support digital business transformation. These include a lack of strategic focus in funding, compounded by inadequate performance measurement frameworks that hinder a clear assessment of the RRF's actual contribution to the digital transition. The ECA also highlighted implementation delays, with milestones and targets for digital measures either not fully achieved or lacking sufficient ambition.

EU initiatives drive national digital strategies with a growing focus on SMEs but further support is needed.

Most of the strategies discussed in this chapter are part of national recovery and resilience plans and benefit from RRF funding. They were selected based on screening relevant policy documents and informed by insights from the experts consulted. This overview is not intended to be exhaustive; rather, it highlights a selection of strategies that illustrate broader trends and priorities. While the extent to which SME digitalisation is prioritised varies among Member States, there is growing recognition of the importance of supporting SMEs in this transition. Increasingly, national strategies and plans reflect a broader policy shift towards the twin transition, driven by EU policy initiatives as mentioned above.

Baltic countries

Estonia is among the Member States where national digital and AI strategies have significantly shaped the digital environment for SMEs and advanced overall digitalisation. The country is currently implementing its third national action plan on AI and has adopted a long-term AI strategy for 2024–2030, reinforcing its commitment to digital innovation and SME support. National digital strategies in **Latvia** and **Lithuania** focus on digital skills, infrastructure and the digitalisation of businesses and public services, with SMEs explicitly targeted.

Central and northern European countries

In some central and northern European countries, particularly **the Netherlands**, digitalisation has long been a strategic priority. This is evident in initiatives such as the Top Sectors policy (Topsectorenbeleid), which aims to strengthen the knowledge economy, and more recently, the National Programme for a Circular Economy. Launched in 2023 with the goal of making the country fully circular by 2050, this programme encourages cross-sector collaboration, including the active involvement of SMEs, and focuses on reducing raw material consumption, extending products' lifespans and integrating digital technologies and data use across key industries. These efforts are carried out within a voluntary framework, reinforced with regular stakeholder engagement.

In **Luxembourg**, the Ministry of the Economy has long maintained dedicated action plans for SMEs, with a strong focus on technology and digitalisation. In 2023, a tax credit was introduced to support digital investment. Regarding the twin transition, the Cleaner Pacts for Entrepreneurs is a policy framework jointly developed by the Ministry of the Economy and the Ministry of the Environment. These pacts aim to support businesses – particularly SMEs – in adopting more sustainable and environmentally friendly practices.

In **Belgium**, the expert interviewed highlighted the specificities of the Member State's federal structure, where, alongside a national strategy, there are three different regional strategies: one for the Flemish Region, one for the Walloon Region and another for the Brussels Capital Region. Although all strategies generally follow EU guidelines and have been steering progress in the right direction, SMEs often face difficulties in adapting to them, especially if they operate across multiple regions. These businesses must adjust to different regional strategies, each with its own priorities, procedures and application processes. Furthermore, the policies and subsidies provided at both the federal and regional levels often overlap but differ in their approach, scope and eligibility criteria. This complexity can confuse SMEs and potentially discourage them from applying for support. Other Member States in this geographical cluster that have made significant progress in advancing SME digitalisation – including in the context of the twin transition – are Austria, France, Germany and Ireland.

In **Austria**, the Digital Austria and AI Mission 2030 strategies play a key role in accelerating digital transformation, with a particular focus on providing targeted support to SMEs. Further reinforcing this commitment, the federal government adopted a climate and transformation plan in October 2022. This supports the transition of Austrian industry towards a

sustainable, renewable-based and digitalised economy. SMEs, alongside start-ups and larger businesses, are among the target groups of this initiative.

France's France 2030 plan places a strong emphasis on supporting SMEs not only through digital transformation but also in their green transition. It prioritises innovation, sustainability and competitiveness, with additional support for start-ups and SMEs through the French Tech Mission.

The federal **German** government has formulated digital progress up to 2030 in its digital strategy. The follow-up Strategy for a Digital Revolution (Strategie für einen digitalen Aufbruch) has set concrete objectives for 2025, including the provision of fibre optic connections for half of all households and businesses.

In **Ireland**, national digital efforts have been shaped by EU strategies on digitalisation and AI, with the SME Strategy for a Sustainable and Digital Europe recognising SMEs as key to achieving EU digital goals. The Harnessing Digital – Digital Ireland Framework reflects this, combining digital and green priorities, and includes initiatives like the Climate Toolkit 4 Business, designed to help SMEs begin their transition towards carbon neutrality.

Eastern European countries

Eastern European countries are developing national strategies to support SMEs in their digital and green transition, aligning with EU goals such as the Digital Decade 2030 and the European Green Deal. These strategies include measures to promote digital skills, technology adoption and energy efficiency. EU funding is crucial to their implementation.

Member States such as Bulgaria, Croatia, Czechia, Hungary, Poland, Romania and Slovenia have introduced strategies to support SMEs. These include digitalisation strategies, AI plans and green transition initiatives. For example, **Poland**, through its State Digitalisation Strategy and Strategy for Responsible Development, emphasises enhancing SME competitiveness and encouraging the adoption of emerging technologies. Similarly, **Bulgaria**'s Digital Transformation Strategy and its national plan for digitalisation and skills underline SMEs' essential role in innovation and economic growth.

Romania's digital agenda targets the specific needs of SMEs, offering tailored support in areas such as e-commerce and digital innovation hubs. In the same vein, **Croatia**'s National Digital Strategy, in place until 2032, places a strong emphasis on supporting digital innovation hubs and creating a favourable context for technological advancement, innovation and environmental sustainability among SMEs.

Czechia's approach, articulated in its Digital Decade roadmap and National Strategy for AI, focuses on enabling SME digitalisation and nurturing start-ups.

Hungary's strategies prioritise improving the regulatory environment and ensuring access to EU funding to facilitate digital upgrades.

Slovenia's Strategy of Digital Transformation of the Economy targets all Slovenian companies, with a strong focus on SMEs. Its objective is to enhance their productivity and competitiveness by promoting the development and use of a wide range of advanced digital technologies, including the Internet of Things, quantum computing, blockchain, data analytics and AI.

According to the experts interviewed, progress on the green transition is often slowed by resistance to change and low awareness or scepticism about the benefits of green transition measures. The national experts interviewed in some of these Member States recommended using fiscal incentives to encourage SMEs' green transition, rather than relying on sanctions. In Hungary, for example, one specific challenge hindering the implementation of digitalisation strategies and the achievement of related objectives is the temporary suspension of EU funds due to concerns about rule of law and governance.

Nordic countries

In **Denmark**, the National Strategy for Digitalisation 2022–2026 reflects the EU's strong emphasis on digitalisation, with SMEs identified as a key focus area. In particular, the strategy's fourth priority area, increased growth and digital SMEs, aims to boost economic growth by supporting SMEs in successfully undergoing digital transformation. The Strategy for Business Development throughout Denmark 2024–2027 highlights the green transition as another key component, aligning national efforts with the broader twin transition agenda.

Finland's national digital strategy, the Digital Compass, is also closely aligned with the EU's Digital Compass, the former complementing and implementing the latter's objectives. Structured around four main pillars – skills, secure and sustainable digital infrastructure, the digital transformation of businesses and the digitalisation of public services – it reflects a strong commitment to EU priorities. The strategy places an emphasis on SMEs, acknowledging the challenges they face in digital development and setting targeted goals to enhance their digital capabilities. While the connection between digitalisation and the green transition is less pronounced, especially in relation to SMEs, it is nonetheless supported through specific financing instruments provided by the government's organisation for innovation, Business Finland.

Sweden's digitalisation strategy, introduced in 2017, is considered outdated and no longer serves as a central point of reference for businesses, according to the national experts interviewed. The current government is developing a new strategy, expected to align more closely with the European Commission's Digital

Compass and to address both the digital and green transition. However, the national experts interviewed for this study noted that this new strategy is too recent to have had a measurable impact on SMEs, and its broad scope limits its effectiveness in responding to the specific needs of smaller enterprises.

Although **Norway** is not a Member State, its national AI strategy aligns broadly with EU policy priorities, although it focuses directly on SMEs only to a limited extent. A national digitalisation strategy currently in development is expected to emphasise SME inclusion.

Southern European countries

Southern European countries such as Cyprus, Greece, Italy, Malta, Portugal and Spain have all integrated digitalisation into their broader recovery and industrial policy agendas.

According to national experts, **Cyprus**'s digital policies, AI strategy and digital skills action plan align with relevant EU frameworks and are beginning to have a demonstrable impact, particularly in supporting SMEs. However, further initiatives, especially in funding and regulatory reform, are needed to fully enable digital and green innovation. The Member State has also introduced green transition policies, which support the twin transition in SMEs.

Greece is also advancing its SME digitalisation in close alignment with EU priorities, having introduced its Digital Transformation Bible 2020–2025. Aligned with the EU Digital Decade, the strategy supports SMEs in both the digital and green transition, with implementation largely funded through the RRF.

Advancing SME digitalisation has been a central focus of **Italy**'s Transition 4.0 and Transition 5.0 plans. The former introduced SMEs to digital tools by incentivising the adoption of interconnected machinery, while the latter expanded this with a stronger emphasis on sustainability and energy efficiency. The experts interviewed about Italy viewed Transition 5.0 as transformative for industrial policy. However, its success will depend on overcoming implementation delays, reducing bureaucratic complexity and ensuring better alignment with both national- and EU-level initiatives.

Italy's digital transition is guided by the Italia Digitale 2026 plan, a core element of its national recovery and resilience plan and the strategic framework for digital transformation. Italy's broader approach also reflects its commitment to the twin transition: the national recovery and resilience plan includes substantial components focused on both the digital and green transition, particularly for SMEs, and national strategies such as the Smart Specialisation Strategy and the National Research, Innovation and Competitiveness Programme for the Green and Digital Transition 2021–2027 further align national innovation policy with EU-level twin transition priorities.

Malta's digitalisation efforts are guided by the Malta Diġitali 2022–2027 strategy, which supports SMEs in adopting emerging technologies and aligns with the EU's Digital Decade. The 2019 AI strategy promotes AI integration in businesses, offering SMEs support through funding, training and expert advice.

Portugal's Digital Transition Action Plan also firmly emphasises investing in digital transformation, particularly by developing digital skills and providing SMEs with targeted support. The national recovery and resilience plan reinforces this with a dual focus on the digital and green transition, paying particular attention to renewable energy and sustainable mobility.

In **Spain**, the Digital Spain Agenda 2026 serves as the main national strategy for digital transformation and has a strong focus on supporting SMEs. Dedicated initiatives, such as the SME Digitalisation Plan 2021–2025, aim to improve competitiveness through funding, skills development and support for digital technology adoption. The 2024 National AI Strategy promotes the adoption of AI applications, with the aim of enhancing SMEs' competitiveness and maximising the benefits of AI. Spain's national recovery and resilience plan includes a digital transformation component with specific support for SMEs, and initiatives like Kit Digital, Digitaliza and Pyme Digital further assist SMEs by offering funding and digital skills training. The National Green Algorithms Plan promotes the development of environmentally neutral digital solutions, integrating the green transition into Spain's digital agenda.

Regulatory change driving SME digitalisation

Since 2020, several countries have adapted their regulatory environments to better support digitalisation and innovation within SMEs, reflecting growing recognition of the need for enabling frameworks that foster digital business transformation.

Various measures have been implemented in **Austria** to support digitalisation, particularly with a focus on start-ups. Regulatory sandboxes, for instance, provide a controlled space for businesses to test new digital solutions under relaxed regulatory conditions. Broader regulatory developments include e-government initiatives like the introduction of a digital identity system (ID Austria) to ease online transactions and the Once Only platform to streamline administrative processes.

Much of this administrative streamlining is also under way in **Norway**, including efforts to simplify the process of compiling and submitting tax declarations. As in Austria, a key theme of these reforms is the 'one-point-of-access' approach, which allows businesses to access all necessary information and services through a single online portal. For example, businesses can now submit

tax declarations directly through their bookkeeping software.

Similarly, in **Denmark**, the MinVirksomhed (MyCompany) initiative, part of the National Strategy for Digitalisation, aims to reduce bureaucracy and automate business reporting. By mapping current reporting practices, it identifies areas for simplification and proposes improvements. Efforts to automate reporting are expected to save businesses around EUR 402 million annually. An SME-friendly tendering system is also being developed to improve access to public contracts.

Electronic invoicing boosts SME digitalisation, but simpler rules and one point of access are key.

An important regulatory change being implemented in several countries is electronic invoicing, which, according to the national experts interviewed, has compelled businesses to adopt the necessary software and develop basic digital skills to use these tools effectively, despite not being specifically designed as an SME support measure.

Electronic invoicing regulations were introduced in **Estonia** in 2020, where the move towards mandatory adoption encountered resistance from SME associations and industry groups due to concerns about potential financial and administrative burdens. **Romania** also introduced electronic invoicing (*e-factura*) in January 2024, which has prompted all companies, including SMEs, to adapt. In addition, Romania implemented electronic signatures (*e-semnătura*) in 2023, which has also contributed to the digitalisation of SMEs. Both regulatory initiatives have simplified administrative procedures and reduced bureaucracy, making it easier for SMEs to conduct business in the digital environment.

The national experts interviewed for **Italy** acknowledged electronic invoicing as an important regulatory tool that has significantly driven digitalisation in the Member State. Electronic invoicing has been particularly effective in promoting data-driven decision-making and enhancing transparency, ultimately contributing to a more digitalised economy. However, they also noted that, from a digitalisation standpoint, electronic invoicing often amounts to little more than converting paper or PDF invoices into digital formats. As a result, administrative processes frequently fail to integrate seamlessly with broader business operations.

The requirement for electronic invoicing and the mandatory introduction of electronic tax returns have also driven digitalisation among smaller businesses in **Hungary**. However, according to the experts interviewed, the regulatory environment has largely failed to evolve in ways that actively support digital innovation within SMEs, focusing instead on digitising processes tied to state obligations.

In **France**, the electronic invoicing reform will take effect in September 2026. The reform aims to combat tax fraud, enhance transparency, reduce administrative costs and accelerate payment processes. Implementation will be phased by business size: large and medium-sized enterprises will be impacted from September 2026 and small businesses and microbusinesses from September 2027. Businesses will be required to use a digital platform approved by tax authorities. The experts interviewed believed that mandatory electronic invoicing, reporting and VAT declarations will significantly boost digitalisation.

In **Belgium**, electronic invoicing will become mandatory as of January 2026. According to the expert, while electronic invoicing has the potential to improve efficiency, especially in ordering and delivery processes, the current regulatory approach may fall short because it does not fully address the core challenges SMEs face, such as limited time, tight budgets and the need for simplified procedures. Instead of focusing solely on compliance, the expert suggests that regulations should place greater emphasis on practical support and implementation strategies that would help SMEs manage their operations more efficiently.

Experts in various countries expressed scepticism about the adaptability of existing legal frameworks to support digitalisation. For example, in **Poland**, the national experts noted that the legal framework remains inadequate in keeping pace with rapid digital transformation. It is often described as unclear, overly complex and unstable – concerns frequently raised by SME entrepreneurs. This legal uncertainty erodes trust in the regulatory environment and leads entrepreneurs to focus on day-to-day survival rather than taking the risks necessary for innovation.

In **Lithuania**, the experts acknowledged the need for regulation but warned that the growing number of rules related to digitalisation is becoming increasingly burdensome. The complexity of these regulations may discourage businesses from investing in digital adoption, as compliance becomes too challenging.

Support measures for SMEs

A variety of financial incentives, including vouchers, grants, tax credits and loans, are available to SMEs across Member States. These are often financed through the RRF. In some Member States, funding is also available through regional calls for proposals, which offer targeted support to SMEs that align with local economic and social priorities and focus on specific sectors or areas.

Despite the wide range of measures available, the 2024 European Investment Bank Group Investment Survey, conducted among approximately 13 000 firms across all Member States, reveals that most investment is self-financed. The survey found that 68 % of SMEs and 64 % of large firms rely primarily on internal resources, rather than external funding. On average, external financing accounts for 28 % of SMEs' funding and 23 % of large firms' funding.

Among firms that use external finance, bank financing is the dominant source, with 78 % of SMEs and 85 % of large firms relying on it. In contrast, only a small proportion of firms access funding through grants or subsidies, with 14 % of SMEs and 18 % of large firms using these sources.

For firms that receive grants, subsidies or bank finance on concessional terms, the financing is often targeted towards specific areas. Approximately 55 % of EU firms that receive such financing use it primarily for innovation and digitalisation (31 %) or the green economy (30 %).

Based on expert interviews, public support for SMEs is limited in some Member States. In Finland and Sweden, few financing instruments specifically target SMEs and digitalisation. In contrast, other Member States, such as **Germany**, **Italy**, **the Netherlands** and **Spain**, have numerous support measures, but SMEs are often unaware of their availability. The **Dutch** government's 2023 inventory revealed over 500 initiatives, many focused on digitalisation and skills development, which can be overwhelming for SMEs. National policy efforts aim to increase awareness and simplify access to these options. However, as reported by the **Italian** and **Luxembourgish** experts, bureaucratic reporting requirements can also pose significant difficulties for SMEs. In **Belgium**, the expert talked about a fragmentation of subsidies and support resulting from the overlap between regional and federal initiatives. While these programmes offer a variety of opportunities, their lack of coordination adds significant complexity. This fragmentation has been identified as a major barrier for SMEs, which often lack the time, resources and expertise to navigate the multitude of available initiatives effectively.

Vouchers

Among the most agile approaches are voucher schemes, which assist SMEs by providing financial support for various digitalisation-related activities, such as consultancy services, training or the implementation of digital technologies. Several national experts regarded these schemes as agile and highly popular among SMEs, attributing this to their minimal bureaucratic requirements.

Voucher schemes prove effective in helping SMEs access funding for digitalisation and innovation due to their agility and minimal bureaucracy.

Voucher schemes have been introduced in several countries to support SMEs. **Ireland**, for example, has two vouchers available: the Innovation Voucher, which provides up to EUR 10 000 for expert consultancy time, and the Grow Digital Voucher, which offers up to EUR 5 000 to support enterprises with up to 50 employees in developing their digital capabilities, including purchasing new software, training or IT configuration.

Similarly, **Spain**'s Kit Digital programme provides vouchers to SMEs to purchase digital solutions packages. The programme has been expanded to cover AI products and has had a significant impact, with over 62 000 businesses benefiting. Its success has led to an expansion to include medium-sized enterprises, and it has been recognised by the Premio Ciudadanía award for its efforts to minimise bureaucracy and adopt a paperless approach.

Another voucher scheme in Spain is the Bono de Conectividad, offering eligible enterprises with fewer than 50 employees a digital voucher of up to EUR 3 000 to purchase internet access and other value-added services related to connectivity. These initiatives aim to support SMEs in their digital transformation and improve their competitiveness.

Italy's Ministry of Enterprises and Made in Italy offers two notable schemes facilitating access to expert advice and promoting innovation among Italian SMEs. The 3i Voucher – Invest in Innovation scheme supports start-ups and microenterprises by incentivising the purchase of professional services for patenting industrial inventions. The other voucher scheme is the Innovation Manager Voucher, which provides SMEs with a 50 % non-repayable grant for innovation projects using Industry 4.0 technologies, led by certified innovation managers.

Broader in scope are the vouchers for start-ups and SMEs offered by the government in **Portugal**. These can be used to acquire digitalisation services, such as consultancy, training and the implementation of digital technologies.

Innovation voucher schemes are not always specifically targeted at SMEs. According to the national experts interviewed, **Finland**'s voucher scheme, aimed at supporting innovation projects, is primarily used by larger companies. The scheme offers a EUR 4 500 grant and requires a EUR 1 500 co-financing contribution from the beneficiary.

Grants

Grant schemes are widely used across Member States, but unlike vouchers, they often entail more extensive administrative and reporting requirements. The scope of support available to SMEs through grant schemes varies significantly from country to country, reflecting disparate policy priorities and funding capacities.

Austria's Impact Innovation programme offers non-repayable grants of up to EUR 150 000, covering 50 % of eligible costs, to support process and organisational innovation within SMEs. Other smaller grants are available through Austria's KMU.DIGITAL programme, which supports SMEs in planning and implementing digitalisation projects. This includes funding for digital status and potential analysis (80 % subsidy, up to EUR 400 per topic), strategy consulting (50 % subsidy, up to EUR 1 000 per topic) and implementation funding (30 % subsidy, up to EUR 6 000) to support project execution. For the funding period up to 2026, the programme has been expanded to include the KMU.DIGITAL & GREEN funding line, with a specific focus on promoting the ecological transformation of SMEs through digital solutions.

Denmark's Innobooster programme, run by Innovation Fund Denmark, provides significantly larger grants ranging from DKK 50 000 to DKK 5 000 000 (approximately EUR 6 700 to EUR 670 000) to help start-ups and SMEs develop and launch new products or services. Under the SMV:Grøn programme, part of the Strategy for Business Development throughout Denmark 2024–2027, smaller grants of up to DKK 150 000 (approximately EUR 20 000) are offered specifically to SMEs. These grants support green transition and circular economy initiatives, including consultancy services or investment in software, machinery, equipment, certifications, eco-labels or testing related to a company's circular economy project.

Grants are a commonly used funding mechanism for SMEs in **Bulgaria**, particularly for projects related to digitalisation and modernisation. In addition to grants supporting investments in new machinery, digital technologies and modernisation efforts with a digital component, SMEs can also access funding through the country's scientific research and innovation programme. This programme specifically supports digital innovation projects, with a focus on Industry 4.0 and 5.0 technologies.

Ireland's Digital Transition Fund, managed by the national enterprise development agency Enterprise Ireland and established under the national recovery and resilience plan, provides grants to support SME digitalisation. Additional support is available through the Research, Development & Innovation Fund, which offers grants for projects that tackle technical challenges and promote significant innovation within companies. Grant rates vary by company size: up to 45 % for small enterprises, 35 % for medium-sized enterprises and 25 % for large enterprises.

Malta offers a broad range of grant schemes to support SME digitalisation, many of which are funded through the national recovery and resilience plan. These schemes consist primarily of non-repayable cash grants and often overlap in terms of their objectives, targeting similar sectors and offering comparable forms of support. One of the main initiatives is the SME Digitalisation Grant Scheme, which provides up to EUR 50 000 to co-finance investments in digital technologies, covering 50 % of eligible costs in Malta and 60 % in Gozo. Complementing this is the Digital Intensification Grant Scheme, which, although not exclusively aimed at SMEs, includes provisions to accommodate them, especially in the tourism and manufacturing sectors. However, uptake of this scheme has been relatively low. Another key initiative is the Business Re-engineering and Transformation Scheme, which funds the use of external advisory services to help SMEs align their operations with digital strategies, particularly through the adoption of advanced technologies such as AI, the Internet of Things and predictive analytics. For the smallest enterprises, the Digitalise your Micro Business initiative targets microbusinesses with fewer than 10 employees, offering funding for essential digital tools and solutions to improve operational efficiency.

Tax credits and incentives

Tax credits are particularly relevant for SMEs as they play an important role in reducing the tax burden and incentivising specific types of investment, especially in areas like digitalisation and innovation, where upfront costs can be significant and technical know-how limited. Many Member States have implemented tax credit schemes, primarily to stimulate research and development (R&D) activities; however, these schemes vary nationally in scope, structure and generosity.

One of the most generous R&D tax credits in the EU is **France**'s Crédit d'impôt recherche, designed to encourage corporate investment in R&D. The tax credit amounts to 30 % of eligible R&D expenses up to EUR 100 million and 5 % for any amount exceeding that threshold. Unlike larger firms, which typically offset the

credit against their corporate income tax, eligible SMEs can receive the credit as a cash refund, a particularly valuable feature for smaller companies that are not yet profitable but are actively investing in R&D.

Broader in scope are **Greece**'s tax credits, supporting digital transformation projects under Development Law No 4887/2022, which established private investment support schemes aimed at promoting regional and economic development, with specific funding provisions for SMEs. Similarly, **Italy** offers a tax credit for investments in capital goods, designed to support companies of all sizes in acquiring new tangible and intangible assets that are essential to technologically and digitally transform production processes. Italy's tax credit scheme runs from 2023 to 2025, with rates based on the investment amount. Investments up to EUR 2.5 million receive a 20 % credit, those between EUR 2.5 million and EUR 10 million receive 10 % and investments between EUR 10 million and EUR 20 million receive 5 %.

Another Italian tax credit viewed positively by the national experts interviewed is ZES Unica Mezzogiorno, which provides tax relief for companies operating in southern Italy. This incentive provides a tax credit for investments in tangible assets, with a minimum investment requirement of EUR 200 000. Under this scheme, tax credit rates vary by region and can be increased by 10 % for medium-sized enterprises and 20 % for smaller enterprises. One of the key benefits of ZES Unica is its potential to be combined with other regional or national measures, resulting in substantial advantages and potentially reducing investment costs to nearly zero. However, complications may arise when national funding is derived from EU resources, as EU rules strictly prohibit double funding for the same expense.

According to the national experts interviewed, reporting requirements for tax credit schemes can, in some cases, be burdensome for SMEs, limiting their ability to fully benefit from these incentives. For example, the tax credit scheme introduced in **Luxembourg** in 2023 is considered complex. Companies must submit an initial notification, provide justification and then re-justify the investment after a six-month feedback period. As a result, there has been a push for simplified and reduced reporting requirements.

Loan schemes

Individual Member States have implemented loan schemes, often co-financed through EU resilience and recovery funds, to support SMEs in their digital transformation and green transition efforts. According to the experts interviewed, many of these loan schemes require companies to understand and meet clearly defined conditions, often involving burdensome reporting requirements. Complying with these demands typically necessitates the allocation of internal financial or human resources, which is considered a burden, particularly for smaller companies that already face resource constraints. As a result, SME entrepreneurs often prefer to rely on their own resources or traditional bank loans, avoiding more bureaucratic and complex external support measures. The introduction of more accessible and less complex support mechanisms could significantly increase SME participation in digitalisation efforts, helping to bridge the gap between available funding and actual uptake.

There are, however, successful examples of loan schemes that are well established and very popular among SMEs. One example is the Nuova Sabatini scheme in Italy, which facilitates access to credit for SMEs investing in machinery, equipment, digital technologies or environmentally sustainable initiatives. Under this scheme, firms benefit from a state contribution that covers part of the interest on their loans. They may also access the SME Guarantee Fund (Fondo di Garanzia per le PMI), which provides public guarantees to reduce the risk for banks and other financial intermediaries, making it easier for SMEs to obtain financing. The national experts interviewed praised the scheme for its continuity and stability – key factors in its success. However, some criticised the limited budget, suggesting that increased funding could significantly enhance its impact on the growth and competitiveness of Italian SMEs.

Other notable loan schemes in Italy that support business development, innovation and entrepreneurship, particularly for SMEs and start-ups, include the Sustainable Growth Fund (Fondo per la Crescita Sostenibile) and the Smart&Start Italia programme. The Sustainable Growth Fund offers low-interest loans, with SMEs eligible for up to 40 % funding if specific criteria are met. Smart&Start Italia provides subsidised, interest-free financing to support innovative start-ups, offering funding between EUR 100 000 and EUR 1.5 million and covering up to 80 % of eligible expenses, which may increase to 90 % in certain cases.

In various Member States, specialised public bodies provide SMEs with loans under favourable conditions, helping to address financing gaps, particularly in areas related to digital transformation and innovation.

In **Greece**, the Hellenic Development Bank launched the Digitalization Co-financing Loans Fund to support SMEs investing in digital upgrades. The fund offers attractive loan conditions, including a two-year partial interest subsidy and interest-free financing for 40 % of the loan principal. Although the bank was expected to play an important role in SME development as an alternative to systemic banks, its influence and funding capacity have, according to the national experts interviewed, diminished over time.

In **Estonia**, KredEx, the national credit guarantee agency, provides loan guarantees for a broad range of technological and innovation-related investments. While not exclusively focused on digitalisation, its guarantees help SMEs access financing for R&D, new equipment and business development.

Finland's state-owned financing company Finnvera offers various guarantees and loans for SMEs, including a dedicated digitalisation and innovation loan. This instrument supports start-ups and other growth-oriented companies engaged in product, process or service development, as well as the digital transformation of business models and supply chains.

In **Ireland**, the Strategic Banking Corporation of Ireland was established in 2014 to provide low-cost, long-term loans to SMEs, particularly when traditional banks fall short. The bank enables Irish SMEs to pursue digital transformation by offering targeted financial support that helps them overcome both funding and capability barriers. To address the funding needs of very small companies, Ireland has established the Microenterprise Loan Fund, administered by Microfinance Ireland, a not-for-profit lender. The fund provides unsecured loans ranging from EUR 2 000 to EUR 50 000 to microenterprises with fewer than 10 employees. These loans are also available to businesses that have been declined financing by a bank, provided an assessment confirms their ability to repay the loan.

Collaboration, networking and partnerships

EU initiatives

All Member States have established European digital innovation hubs (EDIHs) under the Digital Europe Programme, with at least one hub (and often several) per Member State (European Commission, 2025f). Co-funded by the European Commission and national governments, EDIHs are frequently complemented by national innovation hubs or competence centres operating in parallel. They are designed to support the digital transformation of SMEs across the EU by offering access to digital expertise, testing facilities and training, and by facilitating collaboration with larger companies, research institutions and technology providers. Collaboration and knowledge exchange can extend across regions and services, with key priority areas including AI, cybersecurity and high-performance computing. EDIHs' close proximity to businesses makes them a crucial tool for supporting digitalisation at the regional level (Dyba and Di Maria, 2024).

Other EU-level initiatives that complement the work of EDIHs include the European Digital SME Alliance, a network representing over 45 000 ICT SMEs through national sectoral associations in 30 countries, and the Network of SME Envoys, a policy advisory group established by the European Commission in 2011 as part of the review of the Small Business Act. The latter promotes SME-friendly regulation and policymaking across Member States and ensures that SMEs' interests are effectively represented at both the national and EU levels.

National initiatives

There are many national initiatives that support networking and collaboration between SMEs and other entities, funded either entirely through national resources or co-financed by EU funding instruments, including national recovery and resilience plans.

Innovation thrives in connected ecosystems: stronger SME collaboration across supply chains, industry, research and education can accelerate digital adoption.

Noteworthy examples of such government-supported initiatives include **Austria**'s COMET programme and the COIN SME Innovation Networks funding mechanism. COMET supports the establishment of competence centres that promote strategic collaboration between academia and industry. Specifically targeting SMEs, COMET's projects component facilitates the development of new products, processes and service innovations, while also providing emerging consortia and topics with an entry point into the broader COMET framework. COIN SME Innovation Networks support the development of innovation networks between SMEs, research institutions and other organisations. An important element in this context is the support provided for technology and knowledge transfer between network partners.

Public–private partnerships are a well-established practice in **the Netherlands**, mainly developed under the long-standing Top Sectors policy (Topsectorenbeleid). Introduced by the government over a decade ago, this policy aims to foster a business environment that enhances the knowledge economy and helps maintain the Netherlands's position as a global leader in innovation. A key example is Katapult, a national network that connects SMEs with educational institutions, providing them with direct access to a pipeline of skilled students and graduates. The non-profit initiative is government-supported and forms part of the Platform Talent for Technology Foundation, a national hub for expertise and networking in technological education and labour market development.

The expert consulted in **Belgium** highlighted the role of Flanders Innovation and Entrepreneurship (VLAIO), a Flemish government agency dedicated to supporting entrepreneurs and SMEs. VLAIO offers a wide range of services, including subsidies to stimulate growth, innovation and digitalisation. It also promotes the creation of business networks to enhance competitiveness and encourages active collaboration, both between companies and between companies and knowledge institutions, to support knowledge exchanges and joint innovation efforts. Additionally, the Belgian expert interviewed emphasised the importance of localising support and ensuring that networks are easily accessible to SMEs. Sector-specific communication was highlighted as the most effective approach, with particular focus on the vital role of intermediary organisations in translating broader policies into language and actions that are more understandable and relevant for SMEs within specific sectors.

In **Portugal**, several initiatives promote collaboration between SMEs and technology providers or larger companies, aiming to foster digitalisation and innovation. One such initiative is Startup Portugal, a non-profit organisation that supports entrepreneurship by connecting public and private stakeholders within the national ecosystem. Among its programmes is the Pitch Voucher initiative, which encourages collaboration by allowing start-ups to present innovative solutions to technological challenges posed by large companies. Other notable initiatives include the Digital Volunteers Programme – a pilot project that pairs digital experts from large firms with SMEs to mentor the latter in improving their digital skills and business processes – and competitiveness clusters, which facilitate sector-specific collaboration by supporting value chains and promoting partnerships between SMEs and larger companies across various industries (IAPMEI, 2021).

In **France**, national experts noted that the first significant public–private partnership involving collaboration between SMEs and large companies emerged in the aeronautics sector. Start-ups and SMEs play a crucial role in this industry, serving as key drivers of innovation and essential contributors to manufacturing. However, their resilience and competitiveness were severely affected by the COVID-19 pandemic. In response, the French government launched the Ace Aéro Partenaires Investment Fund in 2020. This initiative aims to strengthen small businesses within the aeronautics supply chain, improve working conditions and support the sector's decarbonisation efforts.

In a handful of countries where expert interviews were conducted, the experts highlighted the key role of private networking initiatives in supporting SME digitalisation. According to the national experts interviewed for **Italy**, partnerships led by larger companies are viewed as the most effective in fostering meaningful connections within supply chains. Often driven by regulatory requirements, these partnerships typically result in more structured and mutually beneficial relationships. Such efforts tend to be more successful within specific supply chains rather than across broader industry contexts. This distinction suggests that sector-specific initiatives hold the most promise for fostering meaningful partnerships.

A notable example of a reportedly successful national partnership between large companies and SMEs is the Orange Fab France initiative, led by Orange. Its objective is to establish commercial partnerships between start-ups and Orange's business units, as well as with those of major corporate partners, both nationally and internationally. Orange currently runs four accelerator programmes, two of which are specifically focused on digitalisation. In Italy, initiatives such as Accelera con Amazon and Microsoft's Ambizione Italia #DigitalChamps drive SMEs' digitalisation efforts, equipping them with tools and training for e-commerce, export strategies and generative AI.

Slovenia has implemented initiatives to foster collaboration between SMEs and larger companies. One of the key approaches is through calls for projects that require the formation of consortia. These consortia involve large companies partnering with SMEs and start-ups, which facilitates a two-way transfer of knowledge. This collaboration allows SMEs to enter the value chains of larger companies and benefit from their expertise and resources, while drawing on common transformation and development trajectories that can be beneficial for SMEs' digitalisation. The initiative started in 2018 with a call for pilot projects and has continued with subsequent calls. These calls had a positive ripple effect, as many large companies, including the country's largest commercial bank and the leading telecom operator, started their own digital programme calls, which were open to SMEs.

While recognising the important role of such initiatives, the experts interviewed for **Ireland** noted that collaboration between small and large companies remains challenging. Significant differences between the two often result in a substantial gap in understanding, making it difficult to establish common ground despite the potential benefits. The experts from **Portugal** highlighted that SMEs that are integrated into international supply chains, which are therefore more likely to engage with large firms that invest heavily in R&D, are better positioned to benefit from such collaborations and partnerships.

Policy monitoring and evaluation

The monitoring of SME digitalisation policies and measures varies significantly across Member States, with differing levels of comprehensiveness, institutional engagement and effectiveness. Some Member States, such as **Denmark**, **Finland**, **Germany**, **the Netherlands** and **Poland**, have structured and systematic monitoring processes. These Member States integrate key performance indicators, programme evaluations and financial oversight, often linked to EU funding requirements. For instance, **Poland** places significant emphasis on the development of indicators (aligned with the Digital Decade 2030 targets), a monitoring and reporting system and impact assessment. The experts interviewed, however, observed that it is difficult to determine whether comprehensive evaluations of SME digitalisation policies have been conducted.

In **Germany**, the government systematically assesses the impact of its digitalisation policies for SMEs, but the evaluations are not used to inform a comprehensive digitalisation strategy at the federal level. Instead, individual programme evaluations are conducted in isolation, and there are no structured efforts to develop a cohesive strategy. Funding programmes are designed to be stand-alone, providing value to businesses without requiring continuous funding, to avoid overfunding. This approach reflects the government's goal of enabling businesses to benefit from each programme independently, without relying on a sequence of funding programmes.

Ireland has adopted an innovative, EU-inspired approach to policy evaluation and monitoring in support of SME digitalisation using the SME Test. Introduced in 2021, the SME Test upholds the 'Think Small First' principle from the EU's Small Business Act, ensuring that policymakers consider SMEs' needs throughout the legislative process. The test assesses the impact of new policies on SMEs by consulting them and seeking to minimise regulatory burdens. Widely used across EU institutions, the test follows four steps: (i) identifying affected businesses, (ii) consulting SMEs and their representatives, (iii) conducting a cost–benefit analysis and (iv) exploring alternative solutions or exemptions. The Irish government has strengthened the SME Test by allocating dedicated funding and mandating its application across all departments to ensure that policies better address SME challenges. However, SME organisations argue that the test is often inconsistently applied, with inadequate assessments of real-world impacts, leaving SMEs at a disadvantage.

Several other Member States, including **Austria**, **Bulgaria**, **Cyprus**, **Czechia**, **France**, **Hungary**, **Latvia**, **Lithuania**, **Luxembourg**, **Malta**, **Portugal**, **Spain** and **Sweden**, have mid-level monitoring mechanisms. In some cases, such as Luxembourg, governments supplement their evaluations with insights from business chambers or other institutional actors, primarily using DESI indicators. In many of these Member States, the evaluation and monitoring of public policies – particularly initiatives under the national recovery and resilience plans – have significantly improved in recent years, largely due to enhanced reporting requirements to the European Commission; nonetheless, challenges remain. These include accurately measuring the actual impacts on SMEs, ensuring consistency across evaluations, clarifying the allocation of investments and maintaining transparency throughout monitoring and reporting.

Other Member States, such as **Croatia**, **Estonia**, **Greece**, **Italy** and **Romania**, appear to have more limited or fragmented monitoring mechanisms, according to the experts' insights. In these cases, evaluations tend to focus more on financial expenditure than on tangible business outcomes. For example, the experts consulted in Estonia noted that while key performance indicators are integrated into national strategies and statistical reporting is readily available, there is a lack of comprehensive assessment regarding the tangible benefits for businesses. The reliance on participation metrics offers limited insight into the actual impact on SME performance and competitiveness. A notable exception in Estonia is the funding model for scientific research in seven priority economic areas, which incorporates a supervisory board of entrepreneurs and industry experts. This board actively evaluates the impact and practical relevance of research outcomes, ensuring alignment with industry needs and fostering greater accountability.

The outcomes of these monitoring efforts reveal a mix of successes and shortcomings. In Member States such as **Austria**, **Czechia** and **Denmark**, digitalisation programmes have reportedly led to economic benefits, including revenue growth and increased employment among participating SMEs. However, in many other Member States, such as **Estonia**, **Italy**, **Lithuania** and **Romania**, there is little comprehensive data on how digitalisation policies translate into real business improvements. Bureaucratic barriers, weak institutional coordination and a lack of independent oversight remain common issues.

Policy monitoring and evaluation should go beyond EU metrics as part of the DESI to measure the impact of instruments supporting SMEs' digital transformation.

A recurring theme is the fragmented nature of monitoring, with most governments assessing digitalisation policies primarily through formal procedures rather than holistic impact evaluations. Many Member States track participation rates and financial expenditure but fail to assess the effectiveness of actions or programmes in leveraging digitalisation to enhance SMEs' productivity, competitiveness and long-term business growth. Many governments rely heavily on EU-driven evaluation frameworks, such as the Digital Decade and DESI indicators, rather than developing independent, national-level monitoring mechanisms. Admittedly, several national experts believe that the current DESI is not an appropriate tool for measuring impact.

Several of the national experts interviewed elaborated further on the key challenges in policy monitoring and evaluation efforts. Experts in **Italy** noted that the cycle of launching support initiatives often stops short of incorporating feedback loops to refine and improve policies; initiatives are often abandoned before evaluation is complete, with resources shifted to new schemes. Similarly, in **Croatia**, the expert interviewed lamented the lack of consistent follow-up and emphasised the pressing need for multi-institutional coordination to effectively measure the outcomes of governmental actions. The experts interviewed in **Estonia** also emphasised the need for more robust and meaningful impact assessments to evaluate the effectiveness of digitalisation policies and inform future policy development. These could include conducting surveys, collecting qualitative feedback from SMEs and developing more sophisticated evaluation frameworks that extend beyond basic participation metrics.

In **Sweden**, the national experts noted that the frequent reassignment of digitalisation responsibilities – shifting from the Ministry of Enterprise to the Ministry of Infrastructure and now to the Ministry of Finance – has hindered monitoring efforts. In Member States such as **Czechia** and **Italy**, evaluations are often conducted by the same institutions that implement policies, raising concerns about objectivity. Political reluctance to embrace policy evaluations is another challenge, particularly in **France**, where findings are often not widely disseminated due to accountability concerns and short-term political priorities.

Policy monitoring is instrumental; it helps keep digital strategies on track, but feedback loops are still missing.

In **Belgium**, the fragmentation of subsidies and support measures between the federal and regional governments is reflected in the monitoring of their effectiveness, which prevents the formation of a national general overview. While the expert expressed moderate satisfaction with the monitoring process, noting that it typically involves a broad range of stakeholders, there are still challenges. The interviewee highlighted that monitoring tends to focus on numbers and high-level indicators but does not delve deeply enough into practical, on-the-ground evaluations. Such detailed assessments could facilitate the sharing of best practices and useful examples. The national experts identified key challenges in policy monitoring and evaluation efforts, including the lack of consistent follow-up, inadequate feedback loops and insufficient multi-institutional coordination. The experts also emphasised the need for more robust and meaningful impact assessments, incorporating qualitative feedback from SMEs and developing more sophisticated evaluation frameworks.

To improve monitoring and evaluation efforts, the experts recommended strengthening independent evaluations, incorporating more qualitative impact assessments, reducing bureaucratic complexity in funding applications and increasing SME involvement in the policy feedback process. In some cases, developing a centralised monitoring system, as recommended in **Bulgaria** and **Italy**, could improve coherence and efficiency.

Summary

- Member States have made significant progress in developing national digital and AI strategies, with the RRF providing financial backing for reforms and investments to accelerate digital transformation. Although prioritisation of SME digitalisation varies, there is growing recognition of the importance of supporting SMEs in the twin transition.
- While electronic invoicing has driven SME digitalisation, genuine digitalisation requires a broader regulatory framework that fosters innovation, simplifies administration and reduces red tape. The use of regulatory sandboxes and the centralisation of information and services through a single online portal can reduce complexity and improve accessibility for businesses.
- Member States offer financial incentives, including vouchers, grants and loans, to support SMEs in their digital transformation and green transition. However, many SMEs rely on internal resources, with only a small share accessing external funding. Successful support schemes and agile measures with minimal bureaucracy, such as voucher programmes, have helped SMEs access funding for digitalisation and innovation.
- Public–private partnerships are essential supports for SME digitalisation, providing access to tools, training and expertise. Sector-specific initiatives and collaboration within supply chains are often more effective than broader, industry-wide programmes. These targeted approaches can help SMEs overcome specific challenges and improve their competitiveness.
- Governments have monitoring systems in place to assess the impact of policies or measures for SME digitalisation, but their effectiveness and independence vary. The most effective approaches incorporate structured evaluation frameworks, independent oversight and impact-driven assessments. However, monitoring often remains fragmented and focused on compliance, programme participation or budget consumption, offering limited insights into the real-world impact of digitalisation policies on SMEs. A more coordinated effort is needed to improve transparency, engage SMEs in the policy review process and refine monitoring mechanisms to provide meaningful and actionable insights for future policymaking.

3 Digital skills in SMEs

Key EU initiatives on digital skills at a glance

Digital skills development is crucial to SMEs in the EU. According to a report by the European Commission, more than half of EU SMEs face difficulties in recruiting staff with the necessary digital skills (European Commission: Directorate-General for Communications Networks, Content and Technology, 2019). Principle 1 of the European Pillar of Social Rights states that equal opportunities and access to the labour market rely on the provision of high-quality inclusive education, training and lifelong learning. These are essential for equipping individuals with the skills needed to fully participate in society and to adapt to the labour market's evolving demands.

To address the digital skills gap, the EU has launched several targeted initiatives aimed at supporting the development of digital skills within SMEs. These include the European Skills Agenda for sustainable competitiveness, social fairness and resilience, which was launched in July 2020. The agenda outlines various actions and approaches that consider SMEs' specific needs. For instance, the Pact for Skills promotes the creation of partnerships among stakeholders to facilitate access to skills development and training. Furthermore, the introduction of microcredentials – flexible, targeted learning opportunities tailored to the unique demands of SMEs – helps make training more accessible, practical and relevant. A microcredential is a record of the learning outcomes a learner has acquired following a small unit of training, assessed against a predefined standard.

Digital skills development is a key component of several other major strategies already mentioned in Chapter 2, including the Digital Compass, the New Industrial Strategy for Europe and the SME Strategy for a Sustainable and Digital Europe. Launched in March 2025, the Union of Skills is another initiative aimed at addressing the skills challenges SMEs face by better aligning education and training systems with labour market needs and to make skills and qualifications – regardless of where they are acquired – transparent, trusted and recognised. It advances these goals through strategic actions, practical tools, Erasmus+, the European Social Fund Plus and RRF funding.

Recruitment and employment of ICT specialists

The recruitment and employment of ICT specialists play a crucial role in driving the EU's digital transformation and competitiveness. Demand for skilled ICT professionals is rising, with businesses and organisations across various sectors seeking to leverage technology to innovate and grow (Cedefop, 2023). Against this background, understanding the dynamics of ICT specialist recruitment and employment is essential to address the challenges and opportunities arising from the digital transition.

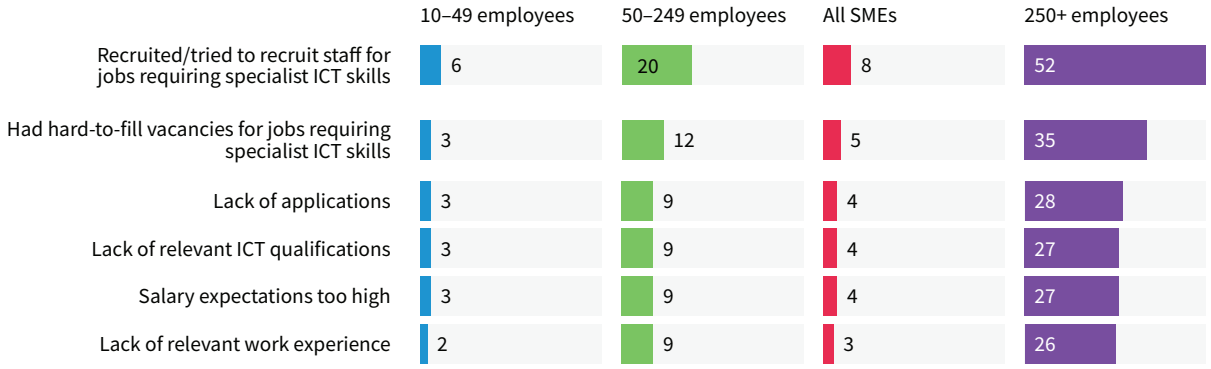
Overall, 18 % of all SMEs in the EU-27 employed ICT specialists in 2024. Across establishment sizes, figures range from 78 % of large businesses and 43 % of medium-sized businesses to just 14 % of small enterprises. Proportions vary significantly across Member States, ranging from 10 % in Romania, 11 % in Italy and 13 % in Spain to approximately 30 % in Denmark, Finland, Ireland and Malta. These numbers have remained relatively unchanged since 2019 in SMEs but have increased in large organisations.

Closely related to this is the recruitment of ICT personnel or staff with ICT skills. Over half of large businesses (52 %) recruited or attempted to recruit staff for jobs requiring specialist ICT skills, whereas only 8 % of SMEs did so. However, one in five medium-sized companies (20 %) made recruitment efforts, compared with 6 % of small enterprises. Approximately 5 % of SMEs reported difficulties in filling vacancies for such jobs, with the proportion ranging from 3 % in small businesses to 12 % in medium-sized ones. In contrast, more than a third of large businesses (35 %) experienced similar recruitment challenges, as illustrated in Figure 14.

There was little difference in the reasons for recruitment difficulties, which included lack of applications, lack of relevant ICT qualifications, high salary expectations and lack of relevant work experience.

Notably, in some Member States, such as **Denmark**, which ranks above the EU average for the share of ICT specialists, companies still face difficulties in recruiting ICT experts, and the number of ICT graduates remains low. In 2021, only 6 % of graduates in Denmark specialised in ICT-related fields, slightly above the EU average of 4 %. While Denmark is making progress towards its Digital Decade targets, these shortages remain a challenge for the future.

Figure 14: Recruitment of ICT staff and challenges in filling vacancies in enterprises by size class, EU-27, 2024 (%)



Note: All activities (except agriculture, forestry and fishing, and mining and quarrying), without financial sector.
Source: Eurostat survey on ICT usage and e-commerce in enterprises.

A common challenge identified in expert interviews in several Member States is that SMEs continue to struggle with accessing ICT talent due to high costs and a shortage of ICT professionals. In some Member States, such as **Poland**, despite making significant strides in recent years as a result of substantial investment in digital transformation initiatives, geographical disparities – particularly in rural areas – further exacerbate the issue, making it difficult for smaller businesses to leverage digital technologies.

In **Bulgaria** and **Spain**, the national experts interviewed highlighted significant salary disparities between large companies and SMEs, making it challenging for smaller businesses to attract qualified workers. Regional differences in skills availability exacerbate the issue. Sofia, the Bulgarian capital, along with a few other key locations, benefits from a skilled workforce, whereas many other areas face shortages due to migration to larger cities.

A proactive approach to address the shortage of ICT specialists can be seen in **Czechia**, where the government has approved measures to facilitate the employment of skilled workers from non-EU countries. Five programmes have been implemented to attract IT experts and researchers, ensuring labour market stability. Starting in 2024, the quota for the Key and Scientific Personnel Programme and the Highly Qualified Worker Programme increased by 1 500 applications per year, while 11 000 employment card applications were allocated under the Qualified Worker Programme to Ukrainian workers, helping businesses fill critical gaps.

Training needs/digital skills needs and their assessment

The likelihood of training needs systematically being reviewed in the workplace increases with company size. Cedefop's second European Skills and Jobs Survey (ESJS2) of 2021 shows that 54 % of large enterprises (those with 250 or more employees) review training needs much more than small businesses (46 %) and microenterprises (37 %). With increasing digitalisation, digital skills and their assessment are of growing importance for SMEs. In response to this rising need, the European Commission launched the Open Digital Maturity Assessment Tool in 2024. It is designed to assess the digital maturity of EDIH customers across the EU, including SMEs ([10]). This tool enables companies to evaluate their digital skills across six key dimensions: digital business strategy; digital readiness; human-centric digitalisation; data management; automation and AI; and green digitalisation. By using the tool, companies can identify skills needs and define tailor-made training programmes to acquire or strengthen them.

Tailored training support, informed by digital maturity assessments, is key to accelerating SME digitalisation and enhancing SMEs' competitiveness and growth.

([10]) The tool can be accessed at https://european-digital-innovation-hubs.ec.europa.eu/dma-tool.

Another online assessment tool made available by the EDIH network is the Digital Speed Test. This offers a rapid assessment of a company's digital readiness, laying the ground for more tailored support and expertise from the EDIH network ([11]).

National providers also offer tools to assess a company's digital maturity independent of EU initiatives. For example, in **Finland** the non-profit networking organisation Tieke Finnish Information Society Development Centre (Tieke Tietoyhteiskunnan kehittämiskeskus ry) offers such tools. Similarly, **Luxembourg**'s Chamber of Skilled Crafts has developed a tool called DigiCheck, which measures a company's digital performance and provides resources to guide them in enhancing their digital capabilities ([12]).

In **France**, the portal francenum.gouv.fr (the official platform of France Num, a government initiative supporting the digital transformation of microenterprises and SMEs) offers digital maturity assessments, training opportunities, expert consultancy and information on financial aid. A similar initiative exists in **Poland** through the AI4MŚP portal, which provides the AI Maturity Index test, a 12-question assessment designed to help SMEs evaluate their organisational readiness for adopting AI.

In various Member States, the national experts interviewed observed that awareness of the importance of skills assessment among SMEs varies significantly, often depending on the industry, business size and sector. For instance, in **Greece** the experts noted that targeted approaches are necessary due to varying levels of awareness across different industries and business sizes.

In **Estonia**, a distinction was observed in the approaches to digital skills assessment based on company size. Larger companies tend to rely on internal assessments or collaborations with industry experts, while smaller SMEs often seek guidance from industry associations. Similarly, in **Norway**, awareness of digital skills needs differs between sectors.

A similar pattern was observed in **Finland**, where experts noted that awareness levels vary more by sector than company size. They also highlighted an increasing discussion around business ownership transfers and generational shifts. Attracting young entrepreneurs to take over existing businesses is seen as beneficial, as it provides a foundation for growth and supports the adoption of new technologies.

In **Croatia**, the national expert interviewed emphasised that understanding digital skills needs largely depends on business owners' awareness. In this regard, most of the national experts interviewed for **Italy** agreed that managerial competencies often fall short in balancing operational improvements with strategic growth and the adoption of digital technologies. These challenges are further exacerbated by the limited availability of training programmes specifically designed for entrepreneurs, who play a crucial role in driving change and innovation.

To support skills assessment efforts, several national initiatives and measures, beyond assessment tools, have been implemented. For instance, in **Ireland** and **Italy** vouchers have proven to be effective and flexible tools for SMEs to use to access consultancy services and digital audits.

In **Spain**, the Activa Industria 4.0 and Agentes del Cambio programmes are two key initiatives supporting SMEs. Both are funded by the national recovery and resilience plan and emphasise the assessment of digital maturity and the enhancement of digital skills. The Activa Industria 4.0 programme targets SMEs in the manufacturing sector aiming to accelerate their transition to Industry 4.0. It provides financial support of EUR 7 400 per SME for specialised consultancy services, including 50 hours of expert consulting dedicated to evaluating and improving the company's digital maturity. The programme involves detailed on-site analyses, leading to the creation of tailored digital transformation plans that outline priority actions and identify suitable technological solutions. The programme also includes targeted workshops to strengthen digital skills, empowering SMEs to implement effective digitalisation strategies. Agentes del Cambio offers grants of up to EUR 20 000 for SMEs to hire certified digital transformation specialists (*agentes del cambio*, or agents of change) for up to 20 months. These specialists play a crucial role in fostering a digital culture within SMEs, developing digital skills and providing tailored training and practical guidance throughout the businesses' digital transformation.

On a broader scale, **Estonia**'s skills forecasting initiative (OSKA) provides valuable insights into in-demand skills, helping SMEs plan for their workforce needs. Although not specifically aimed at SMEs, many OSKA sectoral reports highlight issues directly affecting them, such as skills shortages, the need for digital transformation and the impact of automation. These findings can guide SMEs in making strategic decisions to address skills gaps. In **Ireland**, the Expert Group on Future Skills Needs – an independent body consisting of

([11]) The test is available at https://european-digital-innovation-hubs.ec.europa.eu/digital-speed-test.

([12]) The tool can be accessed at https://innovative-initiatives.public.lu/initiatives/digicheck-digital-assessment-tool.

representatives from the business community, training providers, trade unions and government agencies – provides information and advice to the government on projected future skills needs for the labour market and how these can be addressed through existing education and training programmes. In addition, the Regional Skills Fora – collaborative networks established across nine regions in Ireland to support the development of a responsive skills ecosystem – also play a key role in assessing emerging skills needs. They achieve this by bringing together diverse perspectives from employers, education and training providers and enterprise support agencies.

Zooming in on ICT skills

One of the biggest challenges small enterprises face is their difficulty in attracting and retaining highly skilled employees. ICT specialists are more likely to be drawn to larger companies that offer higher salaries, better career development opportunities and greater access to training and professional growth (OECD, 2021). As a result, small businesses often struggle to compete for top talent, which can further disadvantage them.

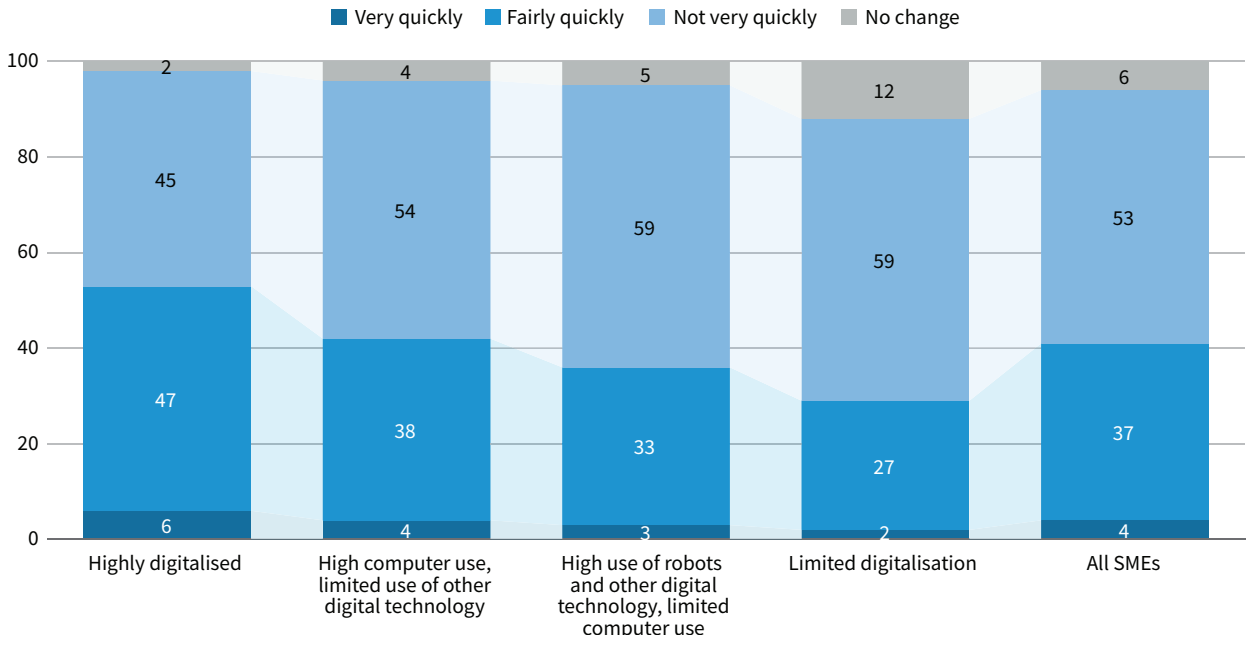
ICT skills that require different degrees of specialisation range from the maintenance of ICT infrastructure, ICT security, the support for office software, the development of business management software and systems, and the development of web solutions to simply working with digital applications, a computer and the internet.

The most recent Eurostat data show that as of 2024, only 38 % of SMEs report that ICT functions are performed by their employees. The proportion ranges from 34 % in small businesses to 59 % in medium-sized enterprises and up to 87 % in large businesses.

Exploring ECS data for 2019 gives some (pre-pandemic) insights into differences in skills requirements and skills matching in SMEs at different degrees of digitalisation. To assess the extent to which employees' skill sets matched their establishments' requirements, the ECS asked managers what percentage of employees had (i) skills that were about right to do their job, (ii) a higher level of skills than was needed in their job or (iii) a lower level of skills than was needed in their job. Overall, in 2019, 28 % of SMEs reported that one fifth of their employees or more were to a certain extent underskilled. Proportions were marginally lower in more digitalised establishments (27 %).

The incidence of over- and underskilling is linked to the speed at which skills requirements change. In 2019, 4 % of SME managers reported that the skills required of employees changed very quickly, 37 % reported fairly quick changes, 53 % reported that skills requirements did not change very quickly and 6 % reported that skills requirements did not change at all (Figure 15). Managers of highly digitalised SMEs were more likely to report very or fairly quick changes (53 %), especially compared with those managing establishments with limited digitalisation (29 %).

Figure 15: Pace of change of skills requirements in SMEs by level of digitalisation, EU-27, 2019 (%)



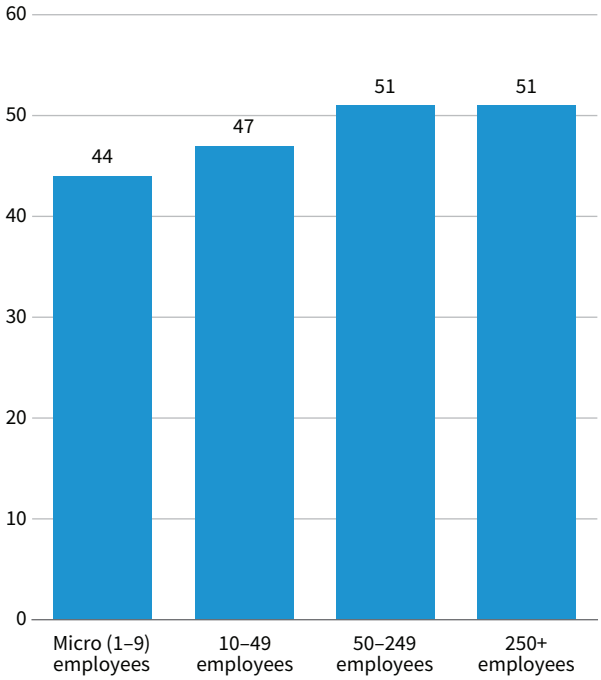
Notes: SMEs engaged in any market activity; enterprises with 10–249 employees only. Values may not always add up to 100 % due to rounding.
Source: Eurofound and Cedefop, 2020, ECS management questionnaire.

Contrary to expectations, the ECS 2020 follow-up survey that was conducted during the COVID-19 pandemic revealed that SMEs with limited digitalisation were more likely to invest in employee training than their highly or partly digitalised counterparts. This can be attributed to the sudden need for staff in these establishments to adapt to digital technologies that had not been widely used prior to the pandemic. In contrast, SMEs that reported a shift in the knowledge and skills required of their employees due to the pandemic showed less pronounced differences between those with low and high digitalisation levels, suggesting that the pandemic-driven skills gap was a more significant factor in driving training decisions than the initial level of digitalisation.

Upskilling and reskilling in SMEs

According to Cedefop's 2021 ESJS2, 47 % of workers employed by microenterprises (1–9 employees) participated in formal or informal education or training. This is much less than the 64 % of employees employed in companies with 250 employees or more and significantly below the training participation rates in medium-sized (62 %) and small (60 %) enterprises. Among trained adult workers in SMEs, 44 % to 51 % hone their digital skills, which is relatively close to the share of digitally trained workers in larger enterprises (51 %) (Figure 16).

Figure 16: Trained adult workers participating in digital skills training in SMEs, EU-27, 2021 (%)



Source: Cedefop's 2021 ESJS2. For more information, see https://www.cedefop.europa.eu/en/projects/european-skills-and-jobs-survey-esjs.

Cedefop's 2021 ESJS2 also shows that the jobs of one in five European adult workers (21 %) always or very often involve learning new things and that the share of workers with a high level of informal learning in SMEs is very similar to the corresponding share found for workers employed in larger organisations.

Training and informal learning drive upskilling and reskilling, which both focus on developing new skills, albeit with distinct objectives. Upskilling is centred on refining and building upon existing skills to enhance performance in one's current job or career path, thereby ensuring relevance in a rapidly changing work environment. In contrast, reskilling involves acquiring new skills to facilitate a career transition, which often requires a significant adjustment in work approach.

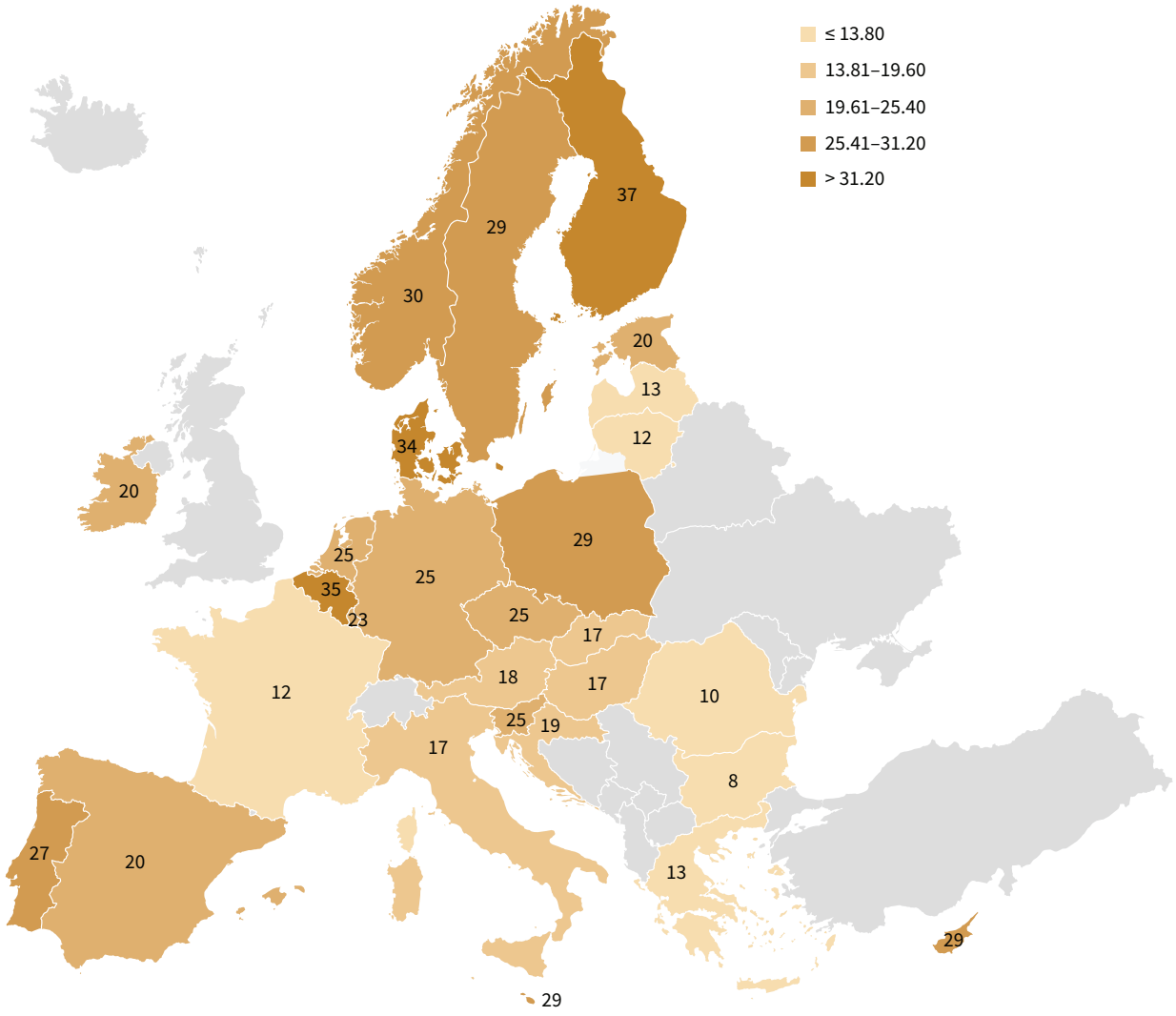
According to the national experts consulted in this study, reskilling poses a greater challenge than upskilling due to its requirement for not only technical retraining but also a profound transformation of professional identity. As a result, organisations must re-evaluate their workforce training strategies to provide adequate support for employees undergoing role transitions, ultimately enabling them to adapt to new positions.

The experts interviewed for **France** and **Ireland** emphasised the significant value of government-backed initiatives with a network-based structure designed to enhance the effectiveness of upskilling and reskilling efforts for small businesses. In France, SME upskilling and reskilling support is provided by the Conseillers Numériques initiative, which deploys 4 000 digital advisors across the country to offer workshops and personalised training sessions. In Ireland, a notable example includes the Local Enterprise Offices, of which there are 31 nationwide, connecting entrepreneurs in microenterprises and SMEs with experienced business practitioners and offering one-on-one mentoring sessions. Similarly, Skillnet Ireland, a national talent and skills development agency, supports businesses through 70 business networks, helping Irish enterprises enhance their competitiveness through tailored upskilling and reskilling solutions.

ICT and other paid training

Eurostat 2024 data show that 21 % of SMEs in the EU-27 provided training to their personnel to develop their ICT skills. Small enterprises in particular struggle to do this; only 17 % reported that they did, compared with 41 % of medium-sized businesses. SMEs in Finland (37 %), Belgium (35 %) and Denmark (34 %) are much more likely to provide ICT training to their employees than those in Bulgaria, Romania, Lithuania and France, with proportions at or below 12 % (Figure 17). In **Germany**, where ICT training provision is slightly above the EU average, an expert interviewed suggested that progress is hindered by business management's lack of openness and limited digital savviness. This may result

Figure 17: SMEs providing training to staff to develop ICT skills, EU-27 and Norway, 2024 (%)



Notes: All activities (except agriculture, forestry and fishing, and mining and quarrying), without financial sector; enterprises with 10–249 employees only.
Source: Eurostat survey on ICT usage and e-commerce in enterprises.

in companies reacting too slowly to digitalisation and not making the right decisions to drive their digital development forward.

Taken together, the data suggest a geographical divide in the level of investment in ICT training for SMEs. Northern and western European countries generally perform better than central and eastern European countries. However, there are also noticeable exceptions: Estonia's and Poland's high proportions of SMEs offering ICT training to their staff are more in line with those of the Nordic states, while France's low share is more in line with those of the eastern European countries.

Looking back to pre-pandemic times, the ECS 2019 asked managers how many employees in their establishment participated in training sessions, either on the establishment's premises or at other locations, during paid working time. Overall, 69 % of SME managers reported that at least one fifth of their employees received such training. Notably, the data showed that employees in partly or highly digitalised businesses were significantly more likely to receive training compared with staff in establishments with limited digitalisation. In highly digitalised SMEs, 30 % of managers reported that more than 80 % of employees received such training.

Cedefop's 2021 ESJS2 suggests that for 73 % of adult trained workers, at least some training was sponsored by their employer, a share that is comparable with the 80 % of workers in larger enterprises who benefited from financial support from their employer.

On-the-job training, continuous learning and learning opportunities

Cedefop's 2021 ESJS2 shows that on-the-job training is most common in medium-sized enterprises (50–249 employees), where 43 % of adult workers took part in such training. In various countries, notably **Estonia**, **Finland**, **Luxembourg** and **Norway**, the experts interviewed as part of this study stressed the importance of on-the-job training as the most practical and effective method for arranging learning opportunities for SMEs with limited resources. This approach allows workers to develop new skills in a hands-on setting. As part of on-the-job learning, experts in **Portugal** also emphasised the importance of mentoring programmes, where experienced employees can guide and train younger or less-experienced colleagues, fostering the transfer of knowledge and skills. In **Italy**, the national experts suggested that reverse mentoring should be considered, where younger employees mentor older, more-experienced individuals. This approach allows younger workers to share their expertise in new technologies, digital tools and modern ways of working, while older employees provide guidance in areas where industry knowledge is needed. Intergenerational collaboration can help bridge skills gaps, emphasising the importance of integrating younger generations into the workforce to support older workers' digital adaptation.

Digital transformation starts with people: tailored, flexible and modular on-the-job training helps SME workforces build digital skills and leadership.

When training is not conducted on the job, the employee must be removed from their regular duties to participate. As a result, the company is required to either temporarily reassign the employee's tasks to other staff members or hire a temporary replacement to ensure continuity of work. This scenario can be particularly costly, especially for SMEs, as the experts in **France** highlighted. During the training period, the company is still responsible for paying the employee's salary, while also potentially incurring the additional expense of hiring a temporary replacement. This effectively doubles the cost of the employee during the training period, a financial burden that not all businesses are willing or able to absorb.

The ECS 2019 investigated the provision of on-the-job training in establishments across the EU as shown in Table 5. Managers were asked to report on the proportion of employees who received on-the-job training or direct instruction from more experienced colleagues in the year prior to the survey (Eurofound and Cedefop, 2020).

More digitally advanced SMEs invest in and prioritise training; further tailored support is needed to help SMEs with lower levels of digitalisation close the gap.

The survey data show a positive correlation between digitalisation and on-the-job training. Highly digitalised SMEs are more likely to provide on-the-job training to a majority of their employees, with 46 % of respondents reporting this, compared with 29 % of SMEs with limited digitalisation. This suggests that digitalisation may drive a greater need for employee training and development or that SMEs that have reached a certain level of digitalisation may be more aware of the need to train their workforce.

The ECS 2019 also examined the need for continuous training, defined as 'training that is received at a frequent, regular basis and that is required to keep up with changes in the equipment that is being used, or changes in the requirements that come along with the certification that is needed to carry out the job'. The survey found that 44 % of EU SMEs reported that only a small proportion of employees, less than 20 %, require continuous training; 39 % of SMEs reported that a substantial proportion of employees, between 20 % and 79 %, require continuous training; and 17 % reported that a high proportion of employees, 80 % or more, require continuous training.

Continuous training is more common in digitalised SMEs. SMEs with high or partial digitalisation require continuous training for a larger proportion of their employees than those with limited digitalisation. This is probably due to the need for employees to keep up with rapid changes in technology, equipment and certification requirements, but again it may also have to do with their awareness of investing in training to keep up with the pace of technological change.

Jobs with limited learning opportunities were, on the other hand, more common in SMEs with limited digitalisation overall or with limited computer use. In around 20 % of establishments of both these types, managers reported that at least 8 in 10 employees had such limited opportunities, which was the case in only around 10 % of the other two types. This suggests that SMEs with limited digitalisation may face challenges in adopting new technologies and providing learning opportunities for their employees, which ultimately could hinder their competitiveness and growth.

Table 5: Training and skills development in SMEs by level of digitalisation, EU-27, 2019 (%)

Group size	Highly digitalised SMEs	Significant computer use, limited use of other digital technology	Significant use of robots and other digital technology, limited computer use	Limited digitalisation	All SMEs
	28	**27**	**18**	**27**	**100**
Employees who received training during paid working time					
Less than 20 %	20	29	32	45	**31**
20 % to 79 %	50	47	44	35	**44**
80 % or more	30	25	24	20	**25**
Employees who received on-the-job training					
Less than 20 %	16	25	25	35	**25**
20 % to 79 %	55	54	52	44	**51**
80 % or more	29	22	23	21	**24**
Employees in jobs that require continuous training					
Less than 20 %	29	39	50	60	**44**
20 % to 79 %	46	44	35	28	**39**
80 % or more	24	17	14	11	**17**
Employees in jobs with limited learning opportunities					
Less than 20 %	59	56	49	50	**54**
20 % to 79 %	37	39	43	37	**39**
80 % or more	4	5	8	12	**7**

Notes: *Refers to SMEs with 10–249 employees engaged in any market activity. Values may not always add up to 100 % due to rounding.*
Source: *Eurofound and Cedefop, 2020, ECS management questionnaire.*

Several national experts highlighted the value of partnerships between SMEs and larger, digitally advanced companies as a key driver of workforce training efforts in SMEs. By learning from larger firms' digital transformations, SMEs can identify relevant elements to integrate into their own operations. This includes understanding how these companies reorganised their processes, leveraged new technologies and fostered a digital-first culture – allowing SMEs to adapt and implement similar strategies in their own context.

However, despite the potential benefits, some experts noted that collaboration between small and large companies can be challenging. Significant differences in scale, resources and organisational structures often create a gap in understanding, making it difficult to find common ground. To address these challenges, governments can incentivise and strengthen network-based structures that connect SMEs with various stakeholders. Such initiatives can foster collaboration, facilitate knowledge exchange and help SMEs bridge the gap with larger firms.

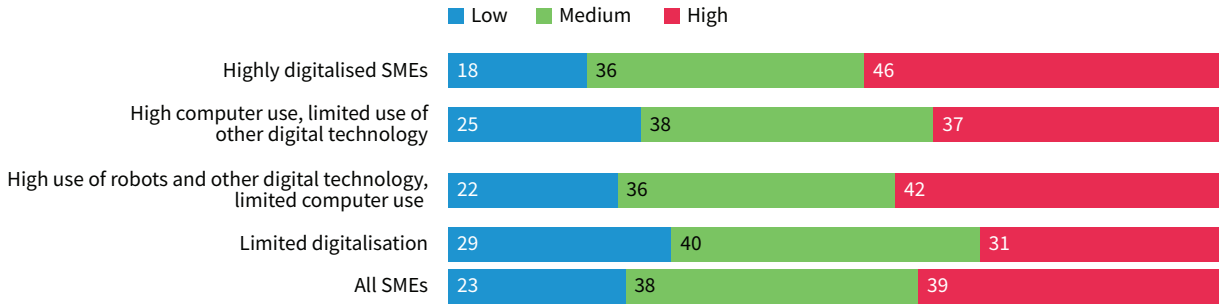
Perceived relevance of training

A composite indicator was used to reflect the importance of training by SMEs' digital profile, based on average scores for different reasons for providing training to employees (skills needed, improving employee morale, increasing organisational participation, increasing employee flexibility). Roughly one fifth of SMEs (23 %) assigned low priority to training, 38 % considered it of medium importance and 39 % regarded it as highly important.

As shown in Figure 18, among highly digitalised SMEs, training was a high priority for 46 % of managers surveyed, compared with only 31 % in SMEs with limited levels of digitalisation. The low prioritisation among SMEs with limited levels of digitalisation suggests that they may underestimate the role of training or they may face resource constraints that prevent them from prioritising it, even if it could help them advance digitally.

From a policy perspective, this finding points to the link between digital maturity and investment in training, indicating that less digitally advanced SMEs may be falling behind not just in technology adoption but also in workforce development.

Figure 18: Perceived importance of training in SMEs by level of digitalisation, EU-27, 2019 (%)



Notes: All market activities; enterprises with 10–249 employees only.
Source: Eurofound and Cedefop, 2020, ECS management questionnaire.

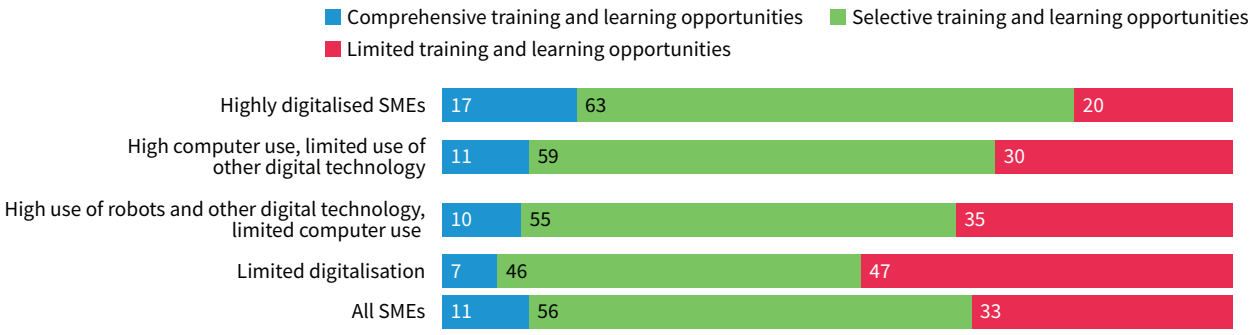
Training and skills development

Previous Eurofound research based on ECS 2019 data used statistical modelling to distinguish between various modes of learning (Eurofound and Cedefop, 2020). Establishments were categorised into three types based on the training and learning opportunities provided to their employees: (i) comprehensive training and learning opportunities, (ii) selective training and learning opportunities and (iii) limited training and learning opportunities.

Only 11 % of all SMEs fall into the 'comprehensive training and learning opportunities' category (Figure 19). The majority (56 %) provide selective training and learning opportunities, indicating that while most SMEs provide some form of training and learning opportunities, they tend to be selective in terms of what they provide and to whom. One third of SMEs fall into the 'limited training and learning opportunities' category.

The analysis also shows a correlation between level of digitalisation and provision of training and learning opportunities. Highly digitalised SMEs are more likely to provide comprehensive training and learning opportunities (17 % versus 7 % of less digitalised SMEs) and are possibly in a better position to attract and retain talent. By contrast, less digitalised SMEs are more likely to only provide limited training and learning opportunities (47 % versus 20 % of highly digitalised SMEs). This more limited training provision in less digitalised SMEs may be due to limited resources or infrastructure to support employee development. These SME types may be at a competitive disadvantage, particularly in industries where digitalisation is rapidly changing the skills required to remain competitive.

Figure 19: Training and skills development in SMEs by level of digitalisation, EU-27, 2019 (%)



Notes: All market activities; enterprises with 10–249 employees only.
Source: Eurofound and Cedefop, 2020, ECS management questionnaire.

National training programmes

Across the EU, there is a strong focus on digital skills development and resilience-building through training programmes for companies. Many of these programmes are funded by the EU and national resilience and recovery plans, aiming to promote sustainable growth and address the challenges posed by the digital and green transition. While some initiatives are specific to SMEs, others are more general and serve a broader range of industries. The common thread across these efforts is the aim to ensure economic recovery and equip the workforce with the necessary skills to adapt to an increasingly digital economy.

EU-backed training boosts SME digital skills, but impact hinges on awareness and industry fit.

Programmes funded through national resilience and recovery plans

Many Member States have launched initiatives to enhance digital skills in SMEs, often funded by EU funds or national recovery and resilience plans. In **Czechia**, the national recovery and resilience plan supports training programmes, which include components involving the modernisation of employment services and digital skills and focus on reskilling and upskilling. The Ministry of Labour and Social Affairs also runs initiatives like Enterprise Training of Employees in Digital IT Skills and Industry 4.0.

Similar programmes exist in other Member States, including **Poland**'s Digital Competence Development Programme, **Latvia**'s Investment Programme and **Romania**'s Digitalisation of SMEs project. These initiatives provide training courses, consultation services and certification opportunities to help SMEs develop essential digital skills. For example, Latvia's programme offers courses on digital marketing, programming and other topics, while Romania's project provides an e-training platform with courses on areas like the Internet of Things and AI.

In **Greece**, the Skills Upgrading and Retraining Programme for employees targets 150 000 private-sector employees, aiming to enhance their digital and green skills. The programme is delivered in collaboration with Greek public universities' lifelong learning centres and licensed vocational training centres.

Hungary also benefits from several EU-funded initiatives aimed at supporting the digital transformation of SMEs. However, much of this support remains uncertain at the time of writing, as EU funding has been frozen due to ongoing concerns regarding Hungary's compliance with the rule of law.

Programmes targeting managers in SMEs

Cedefop's 2021 ESJS2 shows that managerial participation in training increases with firm size, ranging from 60 % in microenterprises to 75 % in large companies. While resources are available to support employee training, incentives for training managers and business owners remain limited, potentially contributing to resistance to change at the leadership level. **Italian** national experts noted that managerial competencies often fall short in balancing operational improvements with strategic growth and the adoption of digital technologies. These challenges are further exacerbated by the limited availability of training programmes specifically designed for entrepreneurs, who play a critical role in driving and leading digital transformation. However, the review of national initiatives conducted by Eurofound identified a few training programmes implemented in selected Member States aimed specifically at SME managers with a focus on leadership and digital skills.

Targeting SME leaders and managers in training programmes is essential to enable more transformative digital change and to foster a culture of innovation.

In **Poland**, the SME Management Academy, part of the Digital Competence Development Programme, focuses on providing managers with training in digital leadership, virtual environments and managing digital transformation. In **Ireland**, the Skills for Better Business Programme is designed to help SME managers improve their workforce management skills, emphasising leadership and digital competencies. Similarly, in **Portugal**, an SME training programme targets both employees and managers, offering tailored training to enhance operational efficiency and adapt to new technologies. With a sector-specific approach, the digital trade programme Comércio Digital, managed by the Digital Economy Association (ACEPI), supports SME managers in trade and community-based services sectors by providing targeted training through the Digital Trade Academy, an educational platform designed to help businesses accelerate their digital transition and adopt e-commerce practices. Other initiatives explicitly targeting managers and business leaders include Emprego + Digital 2025, funded by the national recovery and resilience plan under NextGenerationEU, and Compete 2030, funded using

European Structural and Investment Funds under the Portugal 2030 strategic framework (2021–2027) ([13]).

In **France**, the government initiative France Num supports SMEs' digital transition. It encourages the adoption and increased use of digital technologies by managers in small businesses. By offering digital diagnostics and free training courses, promoting best practices and listing sources of financial assistance for digitalisation, France Num helps demonstrate the benefits of digital technology for the development of the French economy.

eBiznify in **Malta** was a training programme that targeted not only employees but also business owners and managers. Delivered through an e-learning platform and offered free of charge, it focused on digital commerce, equipping participants with the skills and guidance needed to effectively use e-commerce-related services.

Primarily targeting individuals in managerial roles within SMEs, Generación Digital Pymes is a government initiative in **Spain** designed to equip management teams and their employees with the necessary knowledge and practical skills to effectively identify digitalisation opportunities within their businesses and formulate targeted strategies to address them.

From SME-focused to general training programmes

Several training programmes in Member States are specifically designed for or primarily target SMEs. A flagship initiative in **Austria**, the Research Competencies for Business programme (Forschungskompetenzen für die Wirtschaft) supports upskilling through structured training and educational initiatives for research and innovation personnel within Austrian companies, with a particular focus on SMEs. A distinctive feature of this programme is its tiered funding structure, designed to address varying levels of technological competencies within companies. This ranges from customised seminars that facilitate entry into new technological fields, enabling businesses to quickly adapt to emerging trends, to collaborative networks and innovation courses aiming to establish new research priorities within companies.

Government efforts in **Denmark** have prioritised enhancing SME skills for the green transition while also supporting businesses in remote areas. Two key initiatives – NordVest Smart Production and SMV: Grønne Kompetencer – reflect this commitment and are co-financed by the EU, emphasising the digital and green transformation, particularly for SMEs. NordVest Smart Production has been notably impactful in driving growth through digital transformation. It provides SMEs in North Jutland with technology screenings, training sessions and opportunities to collaborate with universities, helping them integrate digital solutions into their operations. SMV: Grønne Kompetencer supports SMEs in transitioning to a greener economy by offering up to DKK 60 000 (EUR 8 041) for a competence development programme with an advisor.

In **Germany**, there are several federal-level measures supporting SME digitalisation, primarily led by the Federal Ministry for Economic Affairs and Climate Action. The Mittelstand-Digital programme, a flagship government initiative, provides SMEs with access to expert knowledge, workshops, training sessions, demonstration centres and networking opportunities to facilitate the adoption of digital technologies. As part of this initiative, a nationwide network of around 100 AI trainers offers SMEs practical knowledge and guidance to help them integrate AI technologies and enhance their competitiveness.

In **Lithuania**, the Smart Skills initiative, funded by the EU, aims to boost digital and technological skills in key sectors such as green technologies, high-tech industries and digital innovation. Furthermore, the Skills for SMEs programme supports targeted investments in upskilling and reskilling employees across various sectors.

Similarly, **Bulgaria** introduced the Human Resources Development programme, funded by the European Social Fund Plus, and the New Skills programme, which addresses training needs based on employer requests. The New Skills programme has been particularly successful, with SMEs making up the majority of participating companies. Bulgaria has also launched multiple digital skills programmes catering to different expertise levels, and the Executive Agency for SMEs provides additional training opportunities.

In **Czechia**, the Operational Programme Technologies and Applications for Competitiveness (OP TAK) receives EU funding to enhance the competitiveness of enterprises, including SMEs, by supporting innovation, R&D and digital transformation. It includes training for employees to effectively operate new technologies and equipment, ensuring that businesses can maximise their investments.

Several other training initiatives are more general in scope and not specifically targeted at SMEs. In **Austria**, for instance, the Qualification Initiative (Qualifizierungsoffensive) supports workforce development through skills checks, qualification projects and further education labs, focusing on digital

([13]) For more on the framework, see https://portugal2030.pt/en/.

and green skills. Similarly, **Estonia** incentivises companies to invest in employee training through favourable tax policies and offers financial support, such as the digital skills development measure and the Training Support programme.

Other Member States, such as **France** and **Cyprus**, have introduced broad initiatives to address digital skills gaps and support workforce development. France's Numeric'Emploi scheme and Cyprus's reskilling programmes, offered through the Human Resource Development Authority, target workers across various industries. Cyprus's Employers and Industrialists Federation also provides free training programmes in collaboration with the Ministry of Education. However, low awareness of these programmes among companies highlights the need for better promotion and advertising to ensure their effectiveness.

Training funds

In around half the Member States, training funds are available to support the development of workforce skills within companies (Cedefop, 2020). The key feature of such funds is their financing structure, which is often based on mandatory contributions from employers charged by the state or sectoral organisations in the form of levies calculated as a percentage of payroll. These contributions are then allocated to various training initiatives. The main difference lies in the scope and focus: some funds have broad eligibility criteria in terms of company size, whereas others target specific sectors or are designed specifically for SMEs, aiming to level the playing field for smaller enterprises that might otherwise struggle to afford employee training. Table 6 offers an overview of some funds mentioned during the interviews with the national experts.

Other training support

Training components are embedded in various measures available to SMEs to support their digitalisation efforts. For example, the networks of EDIHs – a key element of the EU's broader strategy for digital transformation – offer SMEs a range of services, including training, skills assessments, consultancy and tools to bridge the gap between businesses and technology providers.

Grants, tax credits and vouchers are financial mechanisms that SMEs can leverage for training for the digital and green transition. For instance, in **Denmark** SMV:Grønne Kompetencer, part of the Strategy for Business Development throughout Denmark 2024–2027, offers SMEs up to DKK 60 000 (EUR 8 041) to strengthen green transition skills. Support covers tailored competence development with an advisor, including employee or manager training through courses, mentoring or peer-to-peer learning. SMEs can also receive funding for open courses aligned with their green skills needs. As a further offering, the Grøn Kickstart workshops help businesses identify where to begin their green transition and what internal competencies are required.

In **Italy**, SMEs can use tax credits to finance training activities. This mechanism has a relatively low

Table 6: Selected training funds for SMEs in the EU

Member State	Training fund	Key features
Denmark	Sectoral training funds	Governed by sectoral agreements; reimburse training costs; mostly supplement a state-funded continuing vocational education and training system; no unified overview of all funds.
France	FNE-Formation (via OPCO)	Payroll-based contributions; supports companies in transition; 70 % of funding is for small businesses, 60 % for medium-sized businesses, 50 % for large businesses; training must be organised by a Qualiopi-certified provider or employer; supports SMEs' digital transformation.
Greece	Account for Employment and Vocational Training (LAEK)	Employers contribute 0.24 % of payroll; reimburses training costs aligned with business needs.
Ireland	National Training Fund	0.7 % payroll contribution; supports training for employed and unemployed people; experts expressed concerns about significant unused funds (EUR 1.3 billion in 2024).
Italy	Interprofessional funds (e.g. Formazienda, Federazione Artigiani e Piccole Imprese, New Skills Fund)	Funded by 0.3 % payroll contribution; tailored to SMEs and various sectors; New Skills Fund supports digital skills and is co-financed by EU funds; experts expressed concerns about lack of strategic use of funds and the fact that training is often seen as a cost rather than an investment.
Netherlands	O&O Funds (Opleiding en Ontwikkelingsfondsen)	Based on sectoral collective agreements; support training, employability, career development, accreditation of prior learning, and employability/career scans.
Spain	State Foundation for Training in Employment (Fundae)	Funded by 0.7 % payroll fee (0.6 % employer, 0.1 % employee); includes demand-driven (company-managed) and supply-driven (public access) schemes; supports both internal and external training; aids SMEs with training absences and planning.

Sources: Eurofound and Cedefop, expert interviews and desk research conducted for this report.

administrative burden and guarantees financial support without competitive selection. According to survey data, 39 % of Italian SMEs use tax credits to finance training relevant to digitalisation (Digital Innovation in SMEs Observatory, 2024). Similarly, a skills development grant scheme in **Malta** offers tax credits and cash grants to enterprises to invest in upskilling initiatives and employee training, covering up to 70 % of training costs for small enterprises and EUR 2 000 000 per project. These schemes support a wide range of training types, including digital technologies, cybersecurity and digital communications, making them an attractive option for SMEs looking to improve their performance and productivity.

Some countries use voucher schemes to facilitate access to training. A notable example is **Ireland**'s Innovation Voucher, which provides SMEs seeking to develop innovative digital solutions with up to EUR 10 000 in support for expert consultancy services, including digital training initiatives ([14]).

Public and private training platforms to enhance skills development were established in several Member States, with varying degrees of success. For instance, **Bulgaria** has numerous training platforms, but, according to the experts interviewed, a lack of coordination has limited their overall impact. Similarly, **Luxembourg**'s national training platform faces low demand. In contrast, **Lithuania**'s KURSUOK.LT platform successfully provides a centralised hub for state-funded training, with a strong emphasis on digital competencies and lifelong learning.

Other countries have introduced innovative training platforms, such as **Hungary**'s Vállalkozz Digitálisan and **Spain**'s Experiencia Fundae. These platforms offer free expert assistance, learning opportunities and resources for digital skills – including IT development, programming and AI – to support SMEs' digital transformation.

Poland and **Denmark** have launched other initiatives specifically targeting SMEs. Poland's Database of Development Services and Entrepreneurs' Academy offers online learning opportunities covering business and digital skills. Denmark's SMV Vækst initiative takes a more interactive approach. Funded by Industriens Fond, SMV Vækst pairs university students with SMEs to develop digital solutions tailored to the enterprise's needs, facilitating collaboration, knowledge sharing and innovation. This structured exchange provides SMEs with practical tools and insights, building a network for future growth and development.

The Netherlands has embraced sector-specific training, with the Dutch AI Coalition offering AI courses tailored for companies operating in the energy and sustainability sector. Other schemes fall under the Roadmap Human Capital Topsectoren 2020–2023, a strategic initiative aimed at developing a future-proof workforce, well equipped to meet the evolving demands of various industries. One such scheme is the nationally funded SLIM subsidy, which provides grants to SMEs for initiatives that promote learning and development among their employees. This includes hiring advisors to create learning plans, providing career guidance and establishing company training centres to support lifelong learning. Another key initiative is 'learning communities', which are collaborative networks that bring together SMEs, educational institutions, research organisations and other businesses to share knowledge and resources. Their goal is to facilitate practical, demand-driven training and innovation ([15]).

Norway's digital training platforms are predominantly driven by the private sector. For example, SMB Norge, a Norwegian business organisation for SMEs, offers free e-learning courses and cybersecurity training for its members, ensuring that businesses have access to development resources for crucial digital skills.

Summary

- Despite the availability of digital skills assessment tools to identify skills needs and inform targeted training, their adoption remains limited among SMEs, particularly among smaller businesses and those in less digitised or more traditional sectors. To bridge this gap, SME associations, chambers of commerce and other industry organisations are essential in promoting awareness among SMEs of the importance of these tools and how to use them.
- According to Cedefop's 2021 ESJS2, 47 % of workers employed by microenterprises (employing 1–9 people) participated in formal or informal education or training. This is much less than the 64 % of staff in companies with 250 employees or more and significantly below the training participation rates in small (60 %) and medium-sized (62 %) enterprises. Among trained adult workers in SMEs, 44 % to 51 % have undergone digital skills training, which is relatively close to the share of digitally trained workers in larger enterprises (51 %).

([14]) More information on the voucher scheme can be found at https://www.enterprise-ireland.com/en/supports/innovation-voucher.

([15]) For more on learning communities, see https://www.wijzijnkatapult.nl/learning-communities/aan-de-slag/netwerk-learning-communities/.

- According to the ECS 2019, over half of the SMEs surveyed reported that between 20 % and 79 % of their employees received on-the-job training. The prevalence of on-the-job training varies, depending on the level of digitalisation; SMEs with higher levels of digitalisation are more likely to provide on-the-job training. On-the-job training is also widely recognised by the national experts consulted as a crucial aspect of workforce development, particularly in the context of SMEs. From a policymaking perspective, public support for training and on-the-job learning should be paired with providing resources and support to help SMEs adopt digital technologies and increase their level of digitalisation.
- The development of digital skills in EU SMEs is increasingly supported by a range of financial incentives, training funds and programmes of varying scope, many of which receive EU funding. However, for these initiatives to be truly effective, SME awareness must be improved and programmes must be easily accessible and tailored to the specific needs of different industries. Ensuring that training programmes align with SME requirements is crucial for maximising their impact and driving sustainable digital transformation.

4 Job quality and digitalisation in SMEs

As SMEs undergo digital transformation, understanding and safeguarding job quality become increasingly critical. As has been shown so far, digitalisation offers SMEs significant opportunities to enhance productivity, streamline operations and remain competitive. However, these changes also bring challenges that can impact workers' working time, autonomy and other aspects of job quality. Job quality – as defined by Eurofound – is essential not only for individual well-being but also for organisational resilience and innovation. In the context of rapid technological change, ensuring high job quality helps SMEs attract and retain talent, foster employee engagement and build a workforce capable of adapting to future demands. This chapter explores how digitalisation is reshaping work in SMEs and why improving job quality must be central to this transition.

The data source for this chapter is the EWCS 2024. It surveys individual workers about their experience of work. The survey does not provide information about the size of the company or organisation where the respondent works. Instead, it only asks about the size of the specific workplace, namely the number of employees working at the same site as the respondent. In practice, a workplace may be part of a larger establishment or organisation. As a result, some respondents may be classified as working in a small or medium-sized workplace (SMW) even though they are employed by a large enterprise ([16]). Consequently, the proportion of employees reported as working in SMWs may overstate the share employed by SMEs. For example, Eurostat business statistics indicate that in 2022, 37 % of all employed people worked in large enterprises, while the EWCS 2024 found that only 16 % of workers are based in large workplaces ([17]).

Unlike in the analysis presented so far, the examination of EWCS 2024 data also includes micro-workplaces, which are defined as those with two to nine employees.

The digital workplace

The EWCS 2024 is a rich source of information on the use of technology in the workplace. It captures both the technologies used by workers and those used for monitoring and managing staff. The data also reflect workers' perceptions of how technology has changed their work, including removing tasks, creating new ones and facilitating interaction with colleagues across the workplace.

As Table 7 illustrates, the likelihood of workers using technology increases with the size of the workplace, although the differences between small workplaces and medium-sized workplaces are relatively small. For example, 26 % of workers in micro-workplaces use tools that enable online meetings, compared with 39 % in small and 42 % in medium-sized workplaces. In contrast, more than half of workers in large organisations (60 %) report using this technology.

Generative AI and collaborative robots (cobots) are the least-used technologies by workers across all organisation sizes. In SMWs, the proportion of workers that use AI is relatively low, ranging from 7 % in micro-workplaces to 13 % in medium-sized workplaces. Similarly, the use of cobots is also limited, ranging from only 2 % to 3 % across SMWs.

In contrast, the use of computers for work is widespread, and usage rates increase with organisation size. While 48 % of workers in micro-workplaces use computers, laptops, tablets, smartphones or other mobile digital devices at least three quarters of the time, this figure rises to 76 % in large organisations. However, there is little variation in the use of wearable devices across different workplace sizes, with approximately 8 % of workers using them regardless of organisation size.

([16]) A distinction is made between SMWs and SMEs in this report as an actual workplace may be small or medium in size but may form part of a larger entity.

([17]) For more information, see https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Structural_business_statistics_overview.

Table 7: Technology use by workplace size, EU-27, 2024 (%)

	Micro (2–9 employees)	Small (10–49 employees)	Medium (50–249 employees)	Large (250+ employees)
Use of:				
tools that enable online meetings or teleconferences	26	39	42	60
electronic workspaces or cooperation platforms	26	34	37	54
generative AI	7	10	13	23
cobots	2	3	3	8
Automated system (to some/a large extent):				
allocates working time	7	10	9	13
allocates tasks	11	17	16	24
monitors performance	12	19	18	23
Frequency (at least 75 % of the time/always/often) of use of:				
computer, laptop, tablet, smartphone or any other mobile digital devices	48	57	58	76
wearable devices such as smart watches, smart glasses or other sensors	7	9	8	9

Source: EWCS 2024.

Given that analysing the use of individual technologies provides limited insight into how establishments apply them in combination, a different approach was taken for the analysis of the EWCS data. This chapter uses statistical methods to explore whether groups of workers – or workplaces – with similar characteristics can be identified. The analysis begins with the assumption that these groups are not directly observable in the data. To uncover them, factor analysis is employed to identify underlying patterns – referred to as 'factors' – based on workers' and workplaces' reported characteristics (see Box 3).

As the results show, this statistical approach identifies three distinct factors that capture the diversity of technology use more effectively than simply counting devices or applying manual classifications. These factors offer a more nuanced understanding of the technological environments workers face and provide a more accurate picture of how digital technologies are

Box 3: Factor analysis

Factor analysis is a statistical technique used to identify underlying patterns and relationships within a large set of variables. It aims to reduce the complexity of a dataset by identifying a smaller number of underlying factors, or dimensions, that explain the variance and correlations among the original variables. In essence, factor analysis tries to answer the question: 'What are the underlying constructs or concepts driving the patterns and relationships in my data?'. By analysing the correlations and covariances among the variables, factor analysis identifies clusters of variables that tend to move together and represents these clusters as underlying factors. These factors can then be used to summarise and interpret the data, identify patterns and relationships that may not be immediately apparent and provide insights into the underlying structure of the data.

used in the workplace. The following analysis of job quality in SMWs and its relationship with digitalisation is based on the different groups of workplaces identified as displayed in Table 7. The groups are as follows.

Group 1: Digital tools and collaboration (D&C; 33 % [18] of workers in EU SMWs work in D&C workplaces). This group captures the essence of digital collaboration, with high proportions of workers using collaborative tools, meeting remotely and having tasks automatically allocated to them. This group reflects the rise of collaborative platforms, like Microsoft Teams, Slack and Asana, alongside growing reliance on remote meeting tools, such as Zoom and Google Meet. The emergence of generative AI is also streamlining workflows and assisting with content creation, data analysis and automation.

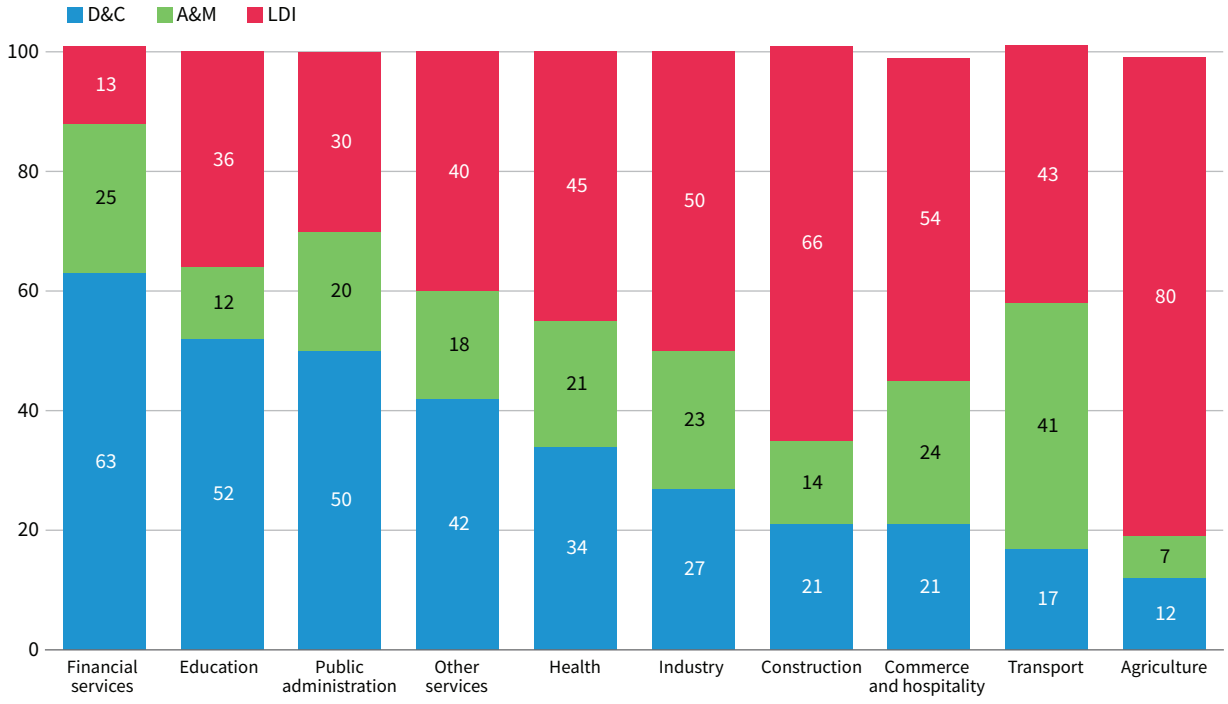
Group 2: Work automation and monitoring (A&M; 21 % of workers in EU SMWs work in A&M workplaces). This group appears to capture the aspects of automation and monitoring, with high proportions of workers reporting automated allocation of working time, automated performance monitoring and the use of computers. Automated tracking enables firms to monitor productivity and optimise workflows in real time, while AI-driven scheduling dynamically assigns tasks based on skills and availability.

Group 3: Low digital intensity (LDI; 47 % of workers in EU SMWs work in LDI workplaces). This group is weak from a statistical point of view but captures workplaces that have a low degree of digitalisation overall and are less likely to use any of the technologies. The data suggest that while workplaces are experimenting with some technologies, their adoption remains limited or context dependent. As industries continue to explore new ways to integrate smart technologies into workflows, the effectiveness and acceptance of such tools will largely depend on their usability, cost-effectiveness and impact on employee well-being.

Sector, occupation and work location

Figure 20 illustrates the distribution of SMWs across various sectors, categorised by their level of digital adoption. Notably, the majority of SMWs in the agriculture sector (80 %) have low digital capabilities, with only a small proportion utilising collaboration (12 %) or automation (7 %) tools. In contrast, the financial services sector exhibits a high level of digital adoption, with two thirds of workers leveraging collaboration. Transport, probably unsurprisingly, is by far the sector with the highest proportion of A&M work (41 %) followed by financial services and commerce and hospitality (at 25 % and 24 %, respectively). Workers in the education and public administration sectors also

Figure 20: Types of SMW across sectors, EU-27, 2024 (%)



Notes: Enterprises with 2–249 employees. Values may not always add up to 100 % due to rounding.
Source: EWCS 2024.

[18] Percentages for the three groups do not add up to 100 % due to rounding.

demonstrate a relatively high uptake of digital technologies, with 52 % and 50 % of workers in SMWs, respectively, using collaborative tools. Conversely, sectors such as construction and commerce and hospitality have a more modest level of digital adoption, with the majority of workers (66 % and 54 %, respectively) reporting low use of digital technologies.

Table 8 shows the predominant location of workers across the different types of SMW. SMWs that are more likely to use collaborative tools are also more likely to adopt flexible work arrangements, with 5 % of workers undertaking full-time telework, 11 % doing regular telework or hybrid work and 20 % doing occasional telework. In contrast, LDI SMWs tend to have more traditional work arrangements, with 51 % falling into the 'other' category, which may indicate a lack of telework options. Notably, LDI SMWs are also more likely to have jobs that are non-teleworkable, with 33 % of workers stating that this is the case, compared with 8 % of collaboration-intensive SMWs.

Table 8: Work arrangements across types of SMW, EU-27, 2024 (%)

	D&C	A&M	LDI	All SMWs
Full-time telework	5	1	0	2
Regular telework/hybrid work	11	2	2	4
Occasional telework	20	8	4	9
At the employer's premises only, teleworkable	16	12	9	12
At the employer's premises only, non-teleworkable	8	28	33	25
Other	40	50	51	48

Source: EWCS 2024.

The digital component of job quality

The EU has consistently emphasised the importance of job quality, as recently evidenced by the European Commission's announcement of a Quality Jobs Roadmap, to be published by the end of 2025. For SMEs, providing good working conditions is not only a social responsibility but also a unique selling point that can attract highly skilled workers. This section explores the relationship between job quality and digitalisation in SMWs, focusing on specific dimensions that are closely related to technological advancements.

This report draws on the Eurofound job quality framework, which consists of seven dimensions developed in collaboration with leading academic experts (Eurofound, 2012, 2017). These dimensions capture the complex and multifaceted nature of job quality, each influencing worker health and well-being independently. This analysis concentrates on three dimensions that are particularly relevant to digitalisation: working time quality, skills and discretion, and work intensity.

Working time and working time arrangements

Working time, encompassing its duration and organisation, is a critical factor determining job quality in two significant ways. First, working time has a profound impact on workers' health and well-being. The longer workers are exposed to workplace risks, the greater their vulnerability to adverse effects, whilst adequate rest periods are essential for proper recovery. Second, a harmonious balance between working time and non-working time throughout an individual's life is vital for sustaining their ability to work. Work–life balance can be facilitated by adapting the duration and organisation of working time to meet the needs of both organisations and individuals. The use of flexible and non-standard working arrangements, including variable start and finish times, rest periods, on-call time and other schedules, is rising. This shift is driven in part by advances in ICT, which enable some types of work to be performed at any time and from any location.

Long hours, short rests and weekend work

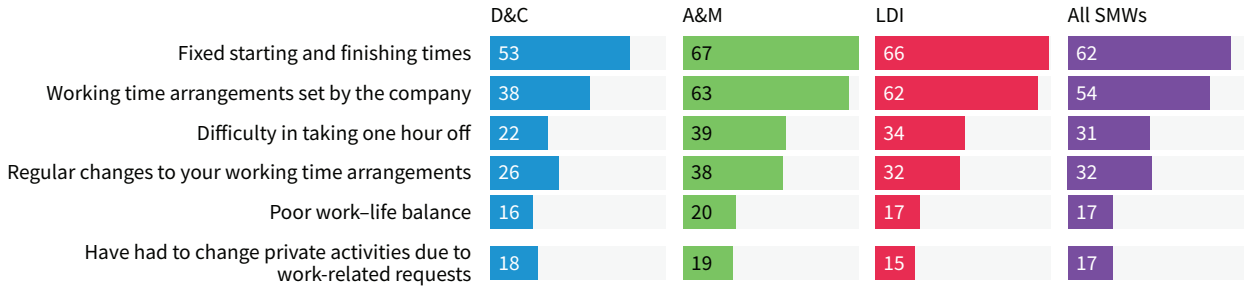
The EWCS collects information on usual working hours per day and week and furthermore captures rest times between working days. Workers in SMWs using collaborative digital tools are more likely to report long working weeks (40 hours or more) (19 %) compared with those in automated work environments or work environments with a low level of digitalisation (17 % and 18 %, respectively). They are also by far the most likely to report long working days (10 hours or more per day) at least once a month, with 35 % doing so, compared with 27 % in the average SMW. Workers in LDI SMWs are the least likely to report little rest time between two working days, with 18 % doing so, compared with 22 % in both other SMW types.

Furthermore, almost one third of workers in D&C SMWs (29 %) reported that they have worked in their free time at least several times a month, which was the case for only 16 % in LDI SMWs. Shift work (including nights and weekends) is, on the other hand, more common in A&M and LDI workplaces (31 % and 20 %, respectively) compared with D&C SMWs (10 %).

Working time arrangements and flexibility

The EWCS covers information on working time arrangements and flexibility. As displayed in Figure 21, some notable patterns are visible across the various types of SMW. First, most SMWs operate with fixed starting and finishing times, with 62 % of all SMWs

Figure 21: Working time arrangements and working time flexibility across types of SMW, EU-27, 2024 (%)



Source: EWCS 2024.

adopting this approach. However, there is a noticeable variation across different types of SMW, with two thirds (66 %) of LDI SMWs and 67 % of A&M SMWs having fixed times, compared with 53 % of D&C SMWs.

In terms of flexibility, the data suggest that many SMWs struggle to accommodate employees' personal needs. For instance, a third of workers (31 %) in all SMWs reported difficulty in taking an hour off, with A&M workers experiencing the most difficulty (39 %). Moreover, a significant proportion of workers, particularly in A&M SMWs (19 %), have had to change their private activities due to work-related requests, highlighting potential work–life balance conflicts.

The data also show that working time arrangements are often set by the company with no possibility for change. This is reported by 54 % of workers in SMWs. Again, there is a variation across the different types of SMW, with A&M SMWs more likely to have company-set arrangements (63 %) than D&C SMWs (38 %). Finally, the data show that regular changes to working time arrangements (several days before or even on the same day) are relatively common, affecting 32 % of all SMWs, with some variation across different types of SMW, ranging from 26 % in D&C to 38 % in A&M workplaces.

Notably, 17 % of workers in SMWs report experiencing a poor work–life balance, with slightly higher proportions in both D&C and A&M compared with LDI workplaces.

Overall, the data indicate that SMWs may offer some degree of flexibility in their working time arrangements, but there is still a need for greater adaptability and consideration of workers' personal needs, particularly with regard to taking time off and achieving a better work–life balance.

Skills and discretion

The 'skills and discretion' dimension is a crucial aspect of work that enables workers to develop and grow through their work experiences. This concept encompasses not only the skills required for a job but also the autonomy granted to workers to apply their skills effectively. A key component of Karasek's demands–control model (Karasek, 1979), decision latitude plays a significant role in determining job quality. This section provides an in-depth analysis of the skills dimension of the job quality framework, breaking down its various components to gain a deeper understanding.

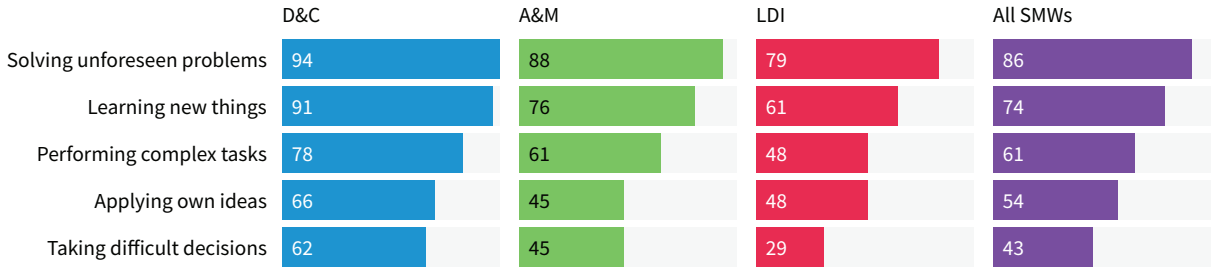
Digitalisation requires continuous training and learning at the workplace level. It is particularly important to engage the older workforce in this endeavour and make sure all staff are on board when it comes to the introduction of new digital technology, apps or workflows. ICT skills are key. Older workers often lack digital skills, which hampers their employability and productivity in a rapidly changing technological work environment (Falck et al., 2022; Eurofound, 2025). By addressing the digital skills gap through targeted initiatives and flexible education models, SMEs can better manage the digital transformation and contribute to economic growth and development in the EU.

Cognitive dimension of work

Creative work and task variation are essential factors that contribute to self-development and motivation in the workplace. In EU SMWs, a significant proportion of workers report that their jobs involve creative and varied tasks, such as solving unforeseen problems independently (86 %) and applying their own ideas always or most of the time (54 %) (Figure 22). Furthermore, many workers indicate that their jobs require continuous learning (74 %) and the completion of complex tasks (61 %).

The degree of cognitive effort varies among SMWs with different digital intensities. The findings from the EWCS 2024 reveal a positive correlation between digital intensity and cognitive aspects of work in SMEs. Specifically, SMWs with high digital intensity and a collaborative approach (D&C) tend to exhibit higher levels of autonomy, complexity and continuous learning, with 66 % of workers applying their own ideas, 78 % performing complex tasks and 91 % reporting learning new things. In contrast, workers in SMWs with low digital intensity (LDI) report lower levels of cognitive demands, with 48 % applying their own ideas, 48 % performing complex tasks and 61 % learning new things. Workers in establishments with an automation

Figure 22: Cognitive aspects of work across types of SMW, EU-27, 2024 (%)



Source: EWCS 2024.

and monitoring approach (A&M) are the least likely to apply their own ideas (45 %) and are close to the average as regards the other aspects.

Additionally, the ability to solve unforeseen problems and make difficult decisions is also more prevalent in D&C SMWs, with almost all workers (94 %) solving unforeseen problems and 62 % making difficult decisions, compared with 79 % and 29 % in LDI SMWs, respectively. Monotonous tasks also differ across the various SMW types, ranging from 41 % in D&C SMWs to 56 % in LDI SMWs.

Overall, these findings suggest that digitalisation used for collaboration is associated with more sophisticated and challenging work and that SMWs where workers use digital tools and collaborate tend to foster a culture of innovation, autonomy and continuous learning.

Skills development and training

Many SMEs in the EU are aware that skills development and staff training are crucial to remain competitive and productive and to ensure that their workforce possesses the necessary skills for future challenges. This is especially true as regards the digital transition and associated skills that are needed in all sectors. At the same time, learning not only happens through formal training (paid for by the employer or employee) but also through learning on the job – which has been partly dealt with in the preceding analysis of the cognitive dimension.

The EWCS enquires about various types of training, including employer-paid, worker-paid and on-the-job training provided by supervisors or co-workers. The survey's training-related questions are general in nature, focusing on the existence and type of training rather than its specific content. The results reveal striking disparities when comparing the different types of SMW (Figure 23). Notably, 6 in 10 workers in D&C SMWs reported attending employer-paid training, whereas this was the case for only 3 in 10 in LDI SMWs.

The differences are even more pronounced when examining worker-paid training, with half of workers (49 %) in D&C SMWs engaging in self-funded training, compared with 40 % in A&M SMWs and only 18 % in LDI

Figure 23: Forms of training across types of SMW, EU-27, 2024 (%)

Source: EWCS 2024.

SMWs. Similarly, on-the-job training follows a comparable pattern to employer-paid training, with D&C SMWs exhibiting higher rates of such training.

Training generally appears to be a lower priority in LDI SMWs, with only 6 % of workers having requested employer-funded training, compared with 10 % in A&M SMWs and 19 % in D&C SMWs. However, once training has been provided, workers across all types of SMW are remarkably consistent in assessing its impact on their career prospects.

Notably, the literature (see, for example, van Hootegem et al., 2019; Ng et al., 2022) indicates that participation in training has a positive effect on workers' self-perceived employability. This reinforces expert opinions that training in SMEs is influenced by a range of factors, including financial resources and staff availability.

Consequently, while extended training periods may yield medium-term benefits, they can also pose significant short-term operational challenges for SMEs, highlighting the need for careful planning and resource management.

Decision latitude and autonomy

Decision latitude, or the ability to make decisions about one's work, is essential for workers to manage job demands and work safely. Having control over their work allows workers to tailor their approach to their needs and abilities, which is crucial for maintaining their health and well-being.

In D&C workplaces, working time flexibility and autonomy are better than on average and in particular better than in A&M workplaces.

The EWCS captures three aspects of autonomy, namely the ability to change the order of tasks, the methods of work and the speed or rate of work. The three aspects taken together constitute the autonomy index.

The level of autonomy among employees in SMWs varies significantly by digital intensity. As expected, the data reveal a positive correlation between digital tools and collaboration and employee autonomy. In terms of specific aspects of work, employees in D&C SMWs tend to have more autonomy. For instance, the ability to change the order of tasks is more prevalent among workers in a D&C environment, with 66 % reporting they can always or often do so, compared with below 50 % in the other types (Figure 24). This flexibility in task management suggests that digital tools and workflows can facilitate more adaptive and responsive work environments.

Similarly, workers in D&C workplaces are more likely to have autonomy over methods of work. While 45 % of workers in both A&M and LDI contexts can always or often change their methods of work, this figure rises to 60 % in D&C SMWs. This indicates that higher digital intensity is associated with more innovative and adaptive work cultures, where workers are empowered to find the most effective ways to accomplish their tasks.

The pace or rate of work is another area where autonomy varies by digital type. The pattern across the various types of SMW is similar to those found for task order and work methods.

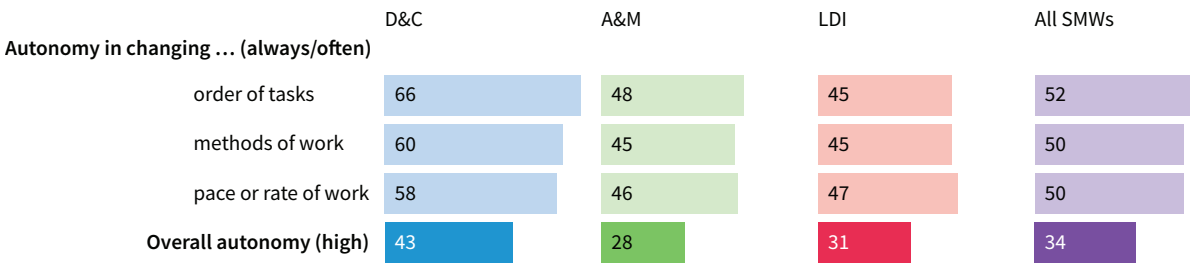
Overall, the level of autonomy experienced by employees also reflects the way SMWs are digitalised. The pattern indicates that SMWs that use digital tools to collaborate and facilitate work tend to foster work cultures that value independence, decision-making and flexibility, whereas this is less the case in workplaces that use digital tools to monitor performance and automate tasks. The significant variation based on digital modes suggests that embracing digital technologies can be a key factor in enhancing worker autonomy if management supports this.

Organisational participation

Participation means the opportunities workers may have to take part in organisational decisions that affect their work – specifically, the capacity of workers to influence decisions as individuals rather than through their representatives.

The previous findings are also reflected in the proportion of workers across SMW types that can influence decision-making and participate in improving their work organisation. Overall, almost half of workers in SMWs (46 %) report that they can always or often influence decisions that are important for their work. Proportions, however, vary from 39 % in A&M SMWs to 56 % in D&C SMWs, confirming higher general autonomy in the latter. A similar share of workers in D&C SMWs report their involvement in improving the work organisation or work processes in their departments or organisations, but in LDI SMWs, only one third of staff report doing so. There, 44 % replied that they are rarely or never involved in such activities.

Figure 24: Autonomy across types of SMW, EU-27, 2024 (%)



Source: *EWCS 2024.*

Work intensity

While work intensity can be seen as a way to maintain and develop workers' interest in their activities, high work intensity is associated with negative impacts on health and well-being. In fact, working at high intensity does not necessarily translate to better company performance or higher productivity, as it can lead to poor planning, delays and defects in quality. Instead, high work intensity is considered a negative contributor to job quality.

Numerous epidemiological studies have shown that high demands at work are linked to an increased risk of cardiovascular disease, musculoskeletal disease and depression, particularly when combined with limited decision-making autonomy and job support (Karasek, 1979; Theorell and Karasek, 1996).

Quantitative demands

In the EWCS, four questions document the experience of work intensity from the workers' perspective: working at very high speed, working to tight deadlines, frequent disruptive interruptions and not having enough time to do the job.

The distribution of quantitative demands across SMWs reveals interesting patterns. A&M SMWs tend to have a more intense work environment, with 61 % of workers reporting working at very high speed and 58 % facing tight deadlines more than half of the time.

In contrast, workers in A&M and D&C SMWs have a lower rate of always feeling overwhelmed by time constraints (both 27 %), suggesting that their digital capabilities improve workflow efficiency. Workers in LDI SMWs have a higher rate of feeling time-pressed (37 %).

Overall, the findings suggest that digital intensity is associated with a more intense work environment but also better time management and workflow efficiency. SMWs with lower digital intensity may struggle with managing their workload, highlighting the need for investment in digital capabilities to improve productivity and competitiveness.

Pace determinants and interdependency

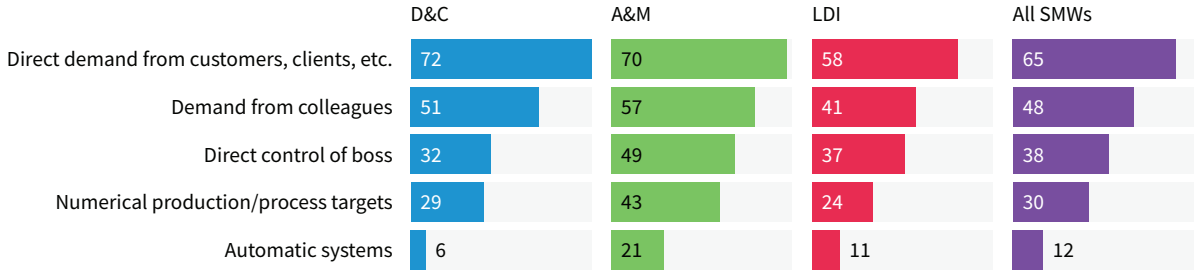
Work intensity can also be measured by the number and interplay of pace-of-work determinants. These determinants encompass a range of factors, including client demands, performance targets, the speed of automated machinery or systems and supervisory expectations. Research has extensively examined the impact of multiple pace determinants on work intensity, revealing that their interaction can lead to a decline in overall working conditions. Specifically, as the number of determinants increases, so too does the interdependency rate, which refers to the complex and potentially conflicting relationships between these factors. This interdependency rate is a critical indicator of work intensity, as it can significantly influence the demands and pressures placed on workers.

The data on pace determinants across SMW types reveal notable patterns (Figure 25). Workers in A&M SMWs tend to have more pace determinants driving their work pace than other types of SMW. Demand from colleagues, for instance, is a significant pace determinant. LDI SMWs have the lowest rate of this determinant (41 %), while D&C workplaces have a higher percentage (51 %) and A&M workplaces have the highest (57 %). Numerical production or process targets exacerbate the higher work intensity of A&M workplaces, with 43 % of workers reporting this determinant compared with 29 % of workers in D&C workplaces and 24 % in LDI work environments.

Automatic systems are a relatively minor pace determinant, reported by 6 % of workers in D&C SMWs and 21 % in A&M SMWs. While direct control of bosses is generally a more significant pace determinant, it shows the same pattern.

Direct demand from customers or clients appears to be the most significant pace determinant, affecting 65 % of workers in all SMWs. The differences between the various digital types of SMW are less pronounced.

Figure 25: Pace determinants across types of SMW, EU-27, 2024 (%)



Source: *EWCS 2024.*

Overall, the data suggest that SMWs with automation and performance monitoring in place tend to have more pace determinants driving their work pace, resulting in higher overall work intensity. Work intensity is also an issue in other workplace types, but workers who use digital tools for collaboration are the least likely to depend on their bosses or automated systems to perform their jobs.

Emotional demands

Emotional demands refer to the expectation that workers will manage their emotions in the workplace, often requiring them to hide their feelings, cope with difficult clients or deal with emotionally challenging situations. This can be a significant source of strain, as it takes effort to regulate one's emotions.

Jobs that involve frequent interaction with people, particularly those that require care and support, tend to have higher emotional demands. Research has linked high emotional demands to mental health issues, fatigue and burnout. In roles where emotional demands are a significant part of the job, recruitment and retention can be major challenges. However, support measures, such as training and supportive management, can help reduce the emotional strain and make work less mentally exhausting. Additionally, studies have shown that workers can develop individual and collective strategies to cope with the emotionally demanding aspects of their job, enabling them to better manage their emotions and reduce the risk of burnout.

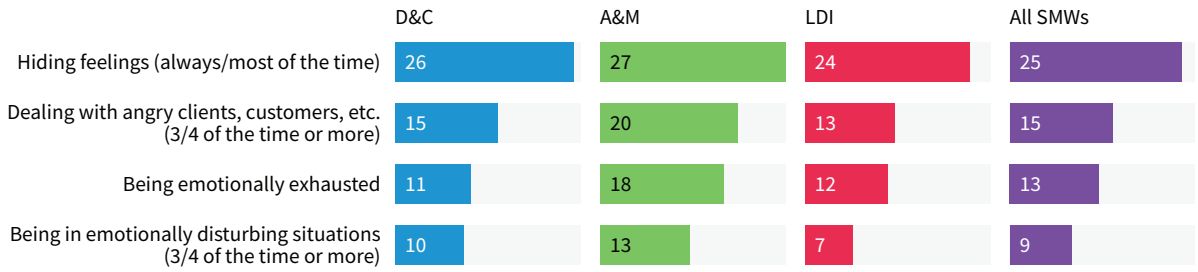
Around one third of workers in SMWs (32 %) must deal directly with customers, clients and other stakeholders all of the time. Workers in A&M environments are more likely to do so than those working in other environments (36 %). These differences are also reflected in emotional demands across the various types of SMW. Again, workers in A&M SMWs are more likely to face emotional demands: 13 % reported being in emotionally disturbing situations at least three quarters of the time, 20 % had to deal with angry clients, customers or other stakeholders, 27 % usually hide their feelings at work and 18 % are emotionally exhausted (compared with 11 % in D&C SMWs and 12 % in LDI SMWs) (Figure 26). The proportions of all emotional demands are lower and vary little between LDI and D&C SMWs.

Technological impact

The EWCS 2024 tried to capture how technology has impacted workers. Respondents were asked if technology has (i) removed some of their tasks, (ii) created new tasks for them or (iii) allowed for more interaction with their colleagues. While it is not surprising that the impact is lowest across the board in

Technologies tend to create new tasks rather than remove existing ones. However, workers in D&C workplaces are the most likely to report improved social interaction due to technology.

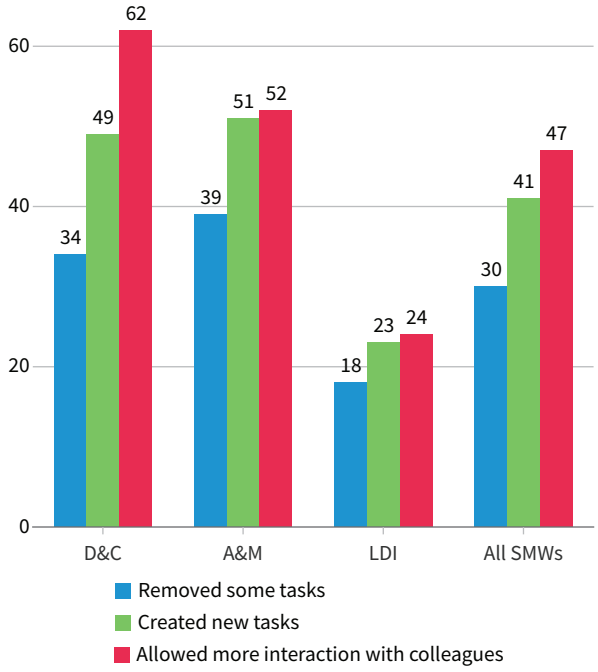
Figure 26: Emotional demands across types of SMW, EU-27, 2024 (%)



Source: EWCS 2024.

LDI workplaces, it is interesting to compare how A&M and D&C SMWs are impacted differently (Figure 27). While proportions are very similar regarding the questions of whether technology has added new tasks and whether it has removed old tasks, workers in D&C SMWs were much more likely to report improved social interaction with their colleagues because of technology (62 % versus 52 %). On a broader scale, it is noteworthy that more workers reported (to some or to a large extent) additional tasks (41 % overall) than reported the removal of tasks (30 %). This difference was most pronounced in D&C SMWs (49 % versus 34 %).

Figure 27: Impact of technology (to a large/to some extent) across types of SMW, EU-27, 2024 (%)



Source: EWCS 2024.

Summary

- As SMEs undergo digital transformation, prioritising job quality is crucial for individual well-being and organisational resilience. Digitalisation brings opportunities for growth but also challenges that can impact workers' autonomy and working conditions.
- The use of digital technologies in SMWs varies by organisation size, with larger organisations being more likely to use tools such as online meeting platforms, electronic workspaces and automation technologies.
- SMWs can be grouped into three types based on their level of digitalisation.
  - **Digital tools and collaboration (D&C).** These SMWs use digital technologies to facilitate collaboration and communication among workers and tend to have a more flexible and autonomous work environment.
  - **Work automation and monitoring (A&M).** These SMWs use digital technologies to automate tasks and monitor employee performance and tend to have a more controlled and structured work environment.
  - **Low digital intensity (LDI).** These SMWs make limited use of digital technologies and tend to have a more traditional and less flexible work environment. They are especially disadvantaged in the skills and discretion dimension, as regards both work autonomy and access to skills development and training.
- **Working time quality.** Workers in SMWs using collaborative digital tools are more likely to report long working weeks and days, with 19 % reporting working weeks exceeding 40 hours and 35 % reporting working days exceeding 10 hours at least once a month. Shift work, including nights and weekends, is more common in A&M workplaces, with 31 % of workers reporting shift work, compared with 10 % in D&C SMWs. Working time arrangements are generally less flexible in both A&M and LDI SMWs with more than two thirds reporting fixed starting and finishing times and working time arrangements being entirely set by the company.
- **Skills and discretion.** Digitalisation requires continuous training and learning at the workplace level, and addressing the digital skills gap is crucial for SMEs to manage the digital transformation and contribute to economic growth. Workers in D&C workplaces tend to have higher levels of autonomy, complexity and continuous learning. Workers in LDI environments are the least likely to attend any form of training, while those in A&M workplaces are less likely to receive employer-paid training and also have the least overall autonomy.
- **Work intensity.** This can lead to poor planning, delays and defects in quality, rather than necessarily translating into better company performance or higher productivity. Workers in A&M workplaces tend to have a more intense work environment, with 61 % working at very high speed and 58 % facing tight deadlines more than half of the time. Workers in D&C workplaces are less likely to feel overwhelmed by time constraints and have more autonomy over their work pace.

Conclusions and policy pointers

The EU is at a critical juncture, facing geopolitical and economic pressures that weigh on growth and stability. In this context, the digital transition is a top priority, with SMEs playing an important role in strengthening resilience, productivity and competitiveness.

The European Commission has established new priorities to guide its mandate, with the goal of bridging the competitiveness gap between the EU and other major global economies, such as those of the United States and China. The key objectives include boosting productivity and competitiveness by addressing the EU's innovation deficit and creating a regulatory environment that fosters technological progress, supports innovative companies and enables the EU's SMEs to compete globally.

This report highlights the need for lasting structural changes, backed by long-term investment and expert support, to help SMEs thrive in the digital age. With a focus on addressing the geographical disparities, skills shortages and funding challenges that hinder digitalisation efforts, the report provides an overview for policymakers of the status quo and the areas of intervention to focus on. It emphasises the value of targeted support and efficient funding processes. It highlights the benefits of reducing bureaucratic burdens and simplifying administrative procedures, and recognises the importance of thorough policy monitoring and evaluation in supporting SME digitalisation in the EU. Finally, the report provides practical insights for policymakers and stakeholders to help SMEs adapt to the digital economy and contribute to a more competitive and sustainable European economy.

The digitalisation of SMEs is a complex and multifaceted process, influenced by various factors, such as company size, digital maturity and sectoral differences. While some Member States, such as Denmark, Finland and Sweden, are pioneers in adopting digital technologies, others, particularly in southern and eastern Europe, are far less advanced in their digital progress. Experts have highlighted the need for a shift in mindset among business leaders, embracing digitalisation as a strategic enabler of innovation, competitiveness and long-term resilience. However, heavy bureaucracy, limited awareness of available programmes and traditional mindsets continue to pose challenges.

The COVID-19 pandemic accelerated digital adoption among SMEs, but opinions diverge on the extent to which digitalisation prompted by the pandemic was transformative for SMEs. National experts acknowledge that digital transformation requires more than just external pressure – it demands a sustained cultural and structural change supported by long-term investment, guidance and expertise. Several barriers to digitalisation in SMEs were identified, including the need for tailored support measures, simplifying administrative procedures, enhancing digital infrastructure and strengthening cybersecurity.

Key challenges persist, including the digital skills gap and limited resources. Upskilling and training are used to address these challenges, but significant shortcomings and barriers to investment in training remain. However, the adoption of digital skills assessment tools to identify skills needs and inform targeted training remains limited, particularly among smaller businesses and those in less digitised or more traditional sectors.

EU and Member State initiatives and funding support, particularly through the RRF, have provided financial backing for reforms and investments aimed at accelerating the digital transition of businesses, with an increasing emphasis on supporting SMEs. Despite varying levels of prioritisation across countries, there is growing recognition of the need to support SMEs in their digital and green transition. Although Member States allocated at least 20 % of their RRF budgets – amounting to around EUR 150 billion – to digital initiatives, a recent assessment by the European Court of Auditors (ECA, 2025) found that many plans lacked strategic focus. The evaluation, which examined how effectively the RRF has supported digital transformation across the EU, highlighted that investments often failed to address critical digital gaps.

Systematic monitoring and evaluation of support programmes is the exception rather than the rule. According to the ECA's 2025 assessment, the absence of clear strategic priorities and performance indicators made it difficult to assess the actual impact of RRF investments on SME digitalisation. The national experts consulted for this study emphasised that the effective monitoring and evaluation of digitalisation policies and programmes is critical to ensuring their long-term impact. On a positive note, the network of digital innovation hubs and competence centres has played a crucial role in supporting SMEs, providing access to technical expertise, testing facilities, training opportunities and guidance on financing.

Digitalisation presents SMEs with significant opportunities to boost productivity, streamline operations and remain competitive. However, these changes also bring challenges that can impact workers' working time, autonomy and other aspects of job quality. Job quality is essential not only for individual

well-being but also for organisational resilience and innovation. In the context of rapid technological change, ensuring high job quality helps SMEs attract and retain talent, foster employee engagement and build a workforce capable of adapting to future demands.

Job quality is a critical area that requires policymakers' attention. Analysis of the EWCS 2024 reveals that digital tools can have a dual impact on the workplace. On the one hand, they can increase efficiency, provide more flexibility in working time and grant workers greater autonomy in organising their tasks and work methods. They can also facilitate collaboration and social interaction. On the other hand, digital technologies can be used to implement algorithmic management, with automated performance monitoring, task allocation and working time control potentially harming workers' engagement and motivation. The report highlights that workplaces with high levels of algorithmic management are often characterised by higher work intensity and reduced autonomy. In contrast, small and medium-sized workplaces with limited digital technology adoption tend to disadvantage workers in terms of training opportunities, work autonomy and working time flexibility. Ultimately, digitalisation can be a catalyst for improving not only company performance and productivity but also workers' overall experience and self-determination. However, if misused, it can create a toxic environment of distrust and control, underscoring the need for policymakers to promote responsible digitalisation practices that prioritise workers' well-being and job quality.

Policy pointers

Develop strategic policies

- To achieve long-term success, digitalisation policies should be coherent, aligned across government sectors and integrated into national strategies for innovation, education and economic development. National roadmaps should reflect the EU Digital Decade goals, with measurable targets and benchmarks. Evaluations should assess tangible impact and effectiveness, using a data-driven approach to refine programmes and ensure that they remain relevant and effective for SMEs.
- A cohesive policy approach could integrate the digital and green transition, ensuring that digitalisation supports sustainability goals and vice versa. SMEs need to be incentivised to invest in projects combining digital innovation with environmental benefits, through targeted funding, tax benefits and simplified compliance processes. Policymakers might consider prioritising sectors like construction, energy, transport and agriculture for twin transition support.
- To ensure a competitive and resilient digital economy, the EU needs to prioritise open standards, interoperability and collaboration between Member States, placing SMEs at the centre of this strategy. Public investment in digital innovation, especially in areas like cloud infrastructure, might also be directed towards empowering innovative European start-ups and small businesses. The overall aim is to reduce dependence on non-European providers and strengthen Europe's technological sovereignty.
- To address digitalisation obstacles, it is crucial to enhance awareness of the available programmes, support a shift in mindsets and provide targeted assistance to help SMEs overcome barriers to digital adoption and upskilling.
- Governments should adopt comprehensive evaluation frameworks, independent oversight and regular impact assessments to guide the continuous improvement of strategies and programmes. By enhancing transparency, involving SMEs in policy reviews and refining monitoring mechanisms, governments can generate actionable insights that inform future policymaking and ensure that support measures remain relevant and impactful.

Invest in infrastructure and trust

- Investment in robust digital infrastructure, particularly high-speed broadband, 5G networks and edge computing, is foundational for enabling SME digitalisation. Trust in digital technologies must also be strengthened, particularly in cybersecurity, with policies that promote awareness, provide education and offer accessible security solutions. By ensuring that businesses feel confident in adopting and using digital tools safely, governments can accelerate transformation and foster a more resilient and future-ready business environment for SMEs.

Ensure continued financial support tailored to SMEs' needs

- Access to tailored financial instruments remains a vital element for supporting SME digitalisation. There was broad consensus among the experts interviewed, from countries with varying levels of digital maturity, that ongoing government support is essential to sustaining SME digitalisation. Governments should provide dedicated funding streams, tax incentives and simplified financing procedures targeted specifically at SMEs. These measures must be complemented by mechanisms to attract private capital, including commercial bank engagement, to expand the impact of public investment. While financial support is critical, policymakers should design it to empower SMEs rather than create dependency, framing such support as a tool for competitiveness and innovation and cutting unnecessary red tape wherever possible.

Intensify collaboration and innovation

- Encouraging collaboration among SMEs and between SMEs and larger firms, universities, and educational and research institutions fosters innovation and accelerates digital adoption. Support should extend to the creation of innovation hubs, digital sandboxes and experimental environments where SMEs can test new technologies with minimal risk. Policymakers should promote sector-specific networks that respond to unique industry needs and stimulate cross-sector synergies, particularly in traditional sectors like manufacturing and agriculture, where digitalisation can drive substantial gains.

Support skills development

- A streamlined, centralised support infrastructure is essential to make digital transformation more accessible for SMEs. One-stop shops that bring together information, funding, mentoring and training can reduce fragmentation and help SMEs better understand and engage with the support ecosystem. At the same time, procedures to access these resources must be simplified to remove bureaucratic barriers. Improved communication – through targeted campaigns, user-friendly digital platforms and localised support – can increase the visibility and uptake of existing schemes, particularly among smaller enterprises.
- Policymakers should invest in targeted digital skills development that is tailored to the realities of SMEs, recognising their diversity in size, sector and digital maturity. Training must target employees and their managers and must be flexible, modular and embedded in the workplace to ensure practical relevance and widespread adoption. Action can also focus on convincing in particular small businesses and microenterprises to systematically review their training needs.
- Both foundational skills, like digital literacy, and advanced capabilities in AI, data analytics and cybersecurity are needed. Updating curricula in higher and vocational education to align with business needs and fostering partnerships between educational institutions and enterprises are crucial to bridging the digital skills gap.

Create an environment of leadership, culture and good job quality

- Successful digitalisation begins with strong leadership and a culture of innovation within SMEs. Policymakers should support initiatives building managerial and entrepreneurial capabilities, helping SME leaders develop a clear vision for digital transformation and shift towards new mindsets. Support should focus on optimising business processes, rather than just adopting technology, to drive meaningful and sustainable digital transformation.
- SME managers should make use of digital technology and digital tools to facilitate collaboration and social interaction and thus ensure positive effects on working time quality, work intensity, autonomy and workers' engagement. They should refrain from using these tools as a means of automated performance monitoring and work automation via automated allocation systems.
- SME managers and business owners should – together with their staff – create environments that promote responsible digitalisation practices, ensuring that digital tools are used to enhance job quality, worker autonomy and well-being. Automated tools for performance and task management should be dealt with carefully to maintain transparency. In addition, workers should be provided with training and upskilling opportunities to adapt to digital changes. Monitoring and evaluating the impact of digitalisation on job quality and worker outcomes could be one starting point.
- Active workforce participation is key in the development of digital technology policies and training programmes to improve job quality and alignment with workers' needs.

References

All Eurofound publications are available at www.eurofound.europa.eu

Baldwin, R. (2016), *The great convergence – Information technology and the new globalization*, Harvard University Press: Belknap Press, Cambridge, MA.

Barney, N., Pratt, M. K. and Cole, B. (2025), 'What is e-business?', TechTarget website, 14 April, accessed 30 June 2025.

Cedefop (European Centre for the Development of Vocational Training) (2020), 'Financing adult learning database', Cedefop website, accessed 19 September 2025.

Cedefop (2022), *Setting Europe on course for a human digital transition – New evidence from Cedefop's second European skills and jobs survey*, Cedefop Reference Series, No 123, Publications Office of the European Union, Luxembourg.

Cedefop (2023), *Going digital means skilling for digital: Using big data to track emerging digital skill needs*, Publications Office of the European Union, Luxembourg.

Digital Innovation in SMEs Observatory (Osservatorio Innovazione Digitale nelle PMI) (2024), *La formazione nelle PMI italiane: percorsi, strumenti e sfide*, Politecnico di Milano: School of Management, Milan.

Dyba, W. and Di Maria, E. (2024), 'Assessment and support of the digitalization of businesses in Europe during and after the COVID-19 pandemic', *Regional Science Policy & Practice*, Vol. 16, Issue 1, 12717.

ECA (European Court of Auditors) (2025), *Support from the Recovery and Resilience Facility for the digital transition in EU Member States – A missed opportunity for strategic focus on digital needs*, Special Report 13/2025, Publications Office of the European Union, Luxembourg.

Eurofound (2012), *Trends in job quality in Europe*, Publications Office of the European Union, Luxembourg.

Eurofound (2017), *6th European Working Conditions Survey – 2017 update*, Publications Office of the European Union, Luxembourg.

Eurofound (2021), *Business not as usual: How EU companies adapted to the COVID-19 pandemic*, Publications Office of the European Union, Luxembourg.

Eurofound (2025), *Keeping older workers in the labour force*, Publications Office of the European Union, Luxembourg.

Eurofound and Cedefop (2020), *European Company Survey 2019: Workplace practices unlocking employee potential*, European Company Survey 2019 series, Publications Office of the European Union, Luxembourg.

European Commission (2008), Communication from the Commission to the Council, the European Parliament, the European Economic and Social Committee and the Committee of the Regions – 'Think Small First': A 'Small Business Act' for Europe, COM(2008) 394 final of 25 June 2008.

European Commission (2020a), Communication from the Commission – A New Industrial Strategy for Europe, COM(2020) 102 final of 10 March 2020.

European Commission (2020b), Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions – An SME strategy for a sustainable and digital Europe, COM(2020) 103 final of 10 March 2020.

European Commission (2021), Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions – Updating the 2020 New Industrial Strategy: Building a stronger single market for Europe's recovery, COM(2021) 350 final of 5 May 2021.

European Commission (2025a), Communication from the Commission to the European Parliament, the European Council, the Council, the European Economic and Social Committee and the Committee of the Regions – A Competitiveness Compass for the EU, COM(2025) 30 final of 29 January 2025.

European Commission (2025b), Communication from the Commission to the European Parliament, the European Council, the Council, the European Economic and Social Committee and the Committee of the Regions – The Union of Skills, COM(2025) 90 final of 5 March 2025.

European Commission (2025c), Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions – A simpler and faster Europe: Communication on implementation and simplification, COM(2025) 47 final of 11 February 2025.

European Commission (2025d), Proposal for a directive of the European Parliament and of the Council amending Directives (EU) 2022/2464 and (EU) 2024/1760 as regards the dates from which Member States are to apply certain corporate sustainability reporting and due diligence requirements (Omnibus I), COM(2025) 80 final of 26 February 2025.

European Commission (2025e), Proposal for a regulation of the European Parliament and of the Council amending Regulations (EU) 2015/1017, (EU) 2021/523, (EU) 2021/695 and (EU) 2021/1153 as regards increasing the efficiency of the EU guarantee under Regulation (EU) 2021/523 and simplifying reporting requirements (Omnibus II), COM(2025) 84 final of 26 February 2025.

European Commission (2025f), 'European Digital Innovation Hubs', European Commission website, 9 April, accessed 16 July 2025.

European Commission: Directorate-General for Communication (2024), *SMEs and skills shortages*, Publications Office of the European Union, Luxembourg.

European Commission: Directorate-General for Communications Networks, Content and Technology (2019), *Digital skills training blueprints for upskilling SME employees and unemployed persons*, Publications Office of the European Union, Luxembourg.

European Commission: Directorate-General for Employment, Social Affairs and Inclusion (2025), 'Executive Vice-President Mînzatu kicks off exchanges with social partners on the Quality Jobs Roadmap', news article, European Commission website, 16 April, accessed 16 July 2025.

European Commission: European Political Strategy Centre (2025), *The future of European competitiveness – Part A: A competitiveness strategy for Europe*, Publications Office of the European Union, Luxembourg.

European Investment Bank (2024), *EIB Investment Survey 2024 – European Union overview*, Luxembourg.

European Union (2016), Regulation (EU) 2016/679 of the European Parliament and of the Council of 27 April 2016 on the protection of natural persons with regard to the processing of personal data and on the free movement of such data, and repealing Directive 95/46/EC (General Data Protection Regulation) (OJ L 119, 4.5.2016, p. 1).

European Union (2020), Council Regulation (EU) 2020/2094 of 14 December 2020 establishing a European Union recovery instrument to support the recovery in the aftermath of the COVID-19 crisis (OJ L 433I, 22.12.2020, p. 23).

European Union (2021a), Regulation (EU) 2021/241 of the European Parliament and of the Council of 12 February 2021 establishing the Recovery and Resilience Facility (OJ L 57, 18.2.2021, p. 17).

European Union (2021b), Regulation (EU) 2021/694 of the European Parliament and of the Council of 29 April 2021 establishing the Digital Europe Programme and repealing Decision (EU) 2015/2240 (OJ L 166, 11.5.2021, p. 1).

European Union (2021c), Regulation (EU) 2021/695 of the European Parliament and of the Council of 28 April 2021 establishing Horizon Europe – the framework programme for research and innovation, laying down its rules for participation and dissemination, and repealing Regulations (EU) No 1290/2013 and (EU) No 1291/2013 (OJ L 170, 12.5.2021, p. 1).

European Union (2022a), Decision (EU) 2022/2481 of the European Parliament and of the Council of 14 December 2022 establishing the Digital Decade policy programme 2030 (OJ L 323, 19.12.2022, p. 4).

European Union (2022b), Regulation (EU) 2022/1925 of the European Parliament and of the Council of 14 September 2022 on contestable and fair markets in the digital sector and amending Directives (EU) 2019/1937 and (EU) 2020/1828 (Digital Markets Act) (OJ L 265, 12.10.2022, p. 1).

European Union (2022c), Regulation (EU) 2022/2065 of the European Parliament and of the Council of 19 October 2022 on a single market for digital services and amending Directive 2000/31/EC (Digital Services Act) (OJ L 277, 27.10.2022, p. 1).

European Union (2024), Regulation (EU) 2024/2847 of the European Parliament and of the Council of 23 October 2024 on horizontal cybersecurity requirements for products with digital elements and amending Regulations (EU) No 168/2013 and (EU) No 2019/1020 and Directive (EU) 2020/1828 (Cyber Resilience Act) (OJ L, 2024/2847, 20.11.2024).

Falck, O., Lindlacher, V. and Wiederhold, S. (2022), 'Elderly left behind? How older workers can participate in the modern labor market', *EconPol Forum*, Vol. 23, Issue 5, pp. 16–19.

Hiziroglu, O. A., Aydin, A. E., Van Isacker, K., Milis, G., Sirashki, H. et al. (2024), 'The role of digital transformation for SMEs during a health crisis: Lessons learnt from Covid-19 epidemic', *CEUR Workshop Proceedings*, Vol. 3698, pp. 11–22.

IAPMEI (Agency for Competitiveness and Innovation) (2021), *Clusters de competitividade – Pactos para a competitividade e internacionalização*, Lisbon.

Karasek Jr, R. A. (1979), 'Job demands, job decision latitude, and mental strain: Implications for job redesign', *Administrative Science Quarterly*, Vol. 24, No 2, pp. 285–308.

Letta, E. (2024), *Much more than a market: Speed, security, solidarity*, Institut Jacques Delors, Paris.

Ng, P. M., Wut, T. M. and Chan, J. K. (2022), 'Enhancing perceived employability through work-integrated learning', *Education + Training*, Vol. 64, Issue 4, pp. 559–576.

OECD (Organisation for Economic Co-operation and Development) (2021), *OECD studies on SMEs and entrepreneurship – The digital transformation of SMEs*, OECD Publishing, Paris.

OECD (2023), 'SMEs in the era of hybrid retail – Evidence from an OECD D4SME survey', *OECD SME and Entrepreneurship Papers*, No 41, OECD Publishing, Paris.

Pintér, R. (2023), 'The digital maturity of Hungarian small and medium sized enterprises – The Digimeter index: Research results', *Budapest Management Review*, Vol. 54, No 10, pp. 66–75.

Savvakis, G. A., Kenourgios, D. and Trakadas, P. (2024), 'Digitalisation as a driver of European SMEs' financial performance during COVID-19', *Finance Research Letters*, Vol. 67, 105848.

Theorell, T. and Karasek, R. A. (1996), 'Current issues relating to psychosocial job strain and cardiovascular disease research', *Journal of Occupational Health Psychology*, Vol. 1, No 1, pp. 9–26.

Urzì Brancati, M. C., Curtarelli, M., Riso, S. and Baiocco, S. (2022), *How digital technology is reshaping the art of management*, JRC Working Papers Series on Labour, Education and Technology, No 2022/05, European Commission: Joint Research Centre, Seville.

Van Hootegem, A., De Witte, H., De Cuyper, N. and Elst, T. V. (2019), 'Job insecurity and the willingness to undertake training: The moderating role of perceived employability', *Journal of Career Development*, Vol. 46, No 4, pp. 395–409.

Visma (2024), 'Finance professionals in het MKB vertrouwen nog niet op AI', Boom Management website, 3 April, accessed 30 June 2025.

Welter, F. and Levering, B. (2021), 'Mittelstand policy after the pandemic – For a sustainable future', Working Paper 02/21, Institut für Mittelstandsforschung Bonn, Bonn.

Annex: Affiliated organisations of the experts interviewed

Country	Type of stakeholder	Organisation(s)
Austria	Government body	Federal Ministry of Labour and Economy (BMAW)
	Employer organisation	Austrian Economic Chamber (WKO)
	Academia or research organisation	Austrian Institute for SME Research (KMU)
Belgium	Employer organisation	Union of Self-Employed Entrepreneurs (UNIZO)
Bulgaria	Government body	Ministry of Economy and Industry, Economic Policy Directorate
	Academia or research organisation	Business Foundation for Education and the National Board for Certified Counsellors
Croatia	Training or digital solutions provider	InfoDom
Cyprus	Government body	Ministry of Research, Innovation and Digital Policy
	Employer organisation	Cyprus Employers and Industrialists Federation (OEB)
	Academia or research organisation	The Cyprus Institute
Czechia	Government body	Ministry of Industry and Trade
	Employer organisation	Confederation of Industry of the Czech Republic
	Employer organisation	Association of Small and Medium-sized Enterprises and Crafts of the Czech Republic
Estonia	Government body	Ministry of Economic Affairs and Communications
	Training or digital solutions provider	Baltic Computer Systems
Finland	Government body	Ministry of Economic Affairs and Employment (TEM)
	Employer organisation	Federation of Finnish Enterprises
	Trade union	Trade Union PRO
France	Employer organisation	Confederation of Small and Medium-sized Enterprises (CPME)
	Training or digital solutions provider	OPCO Atlas
	Training or digital solutions provider	National Agency for Adult Professional Training (AFPA)
Germany	Academia or research organisation	Institute for SME Research (IfM Bonn)
Greece	Employer organisation	Small Enterprises' Institute of the Hellenic Confederation of Professionals, Craftsmen and Merchants (IME GSEVEE)
	Trade union	Labour Institute of the Greek General Confederation of Labour
	Academia or research organisation	University of Crete
Hungary	Government body	Ministry of Economic Development, Department of Enterprise Technologies and ICT Industry Development
	Trade union	Federation of Chemical Workers of Hungary (VDSZ)
	Academia or research organisation	Corvinus University of Budapest
Ireland	Government body	Enterprise Ireland
	Employer organisation	Irish SME Association (ISME)
Italy	Employer organisation	API Associazione Piccole e Medie Industrie
	Employer organisation	Confartigianato
	Employer organisation	Piccola Industria, Confindustria
	Trade union	Italian General Confederation of Labour (CGIL)
	Academia or research organisation	Digital Innovation in SMEs Observatory, Politecnico di Milano

Country	Type of stakeholder	Organisation(s)
Latvia	Government body	Ministry of Economics, Department of Business Competitiveness
	Government body	Ministry of Economics, Department of Business Support
	Employer organisation	Business Union of Latvia
	Employer organisation	Employers' Confederation of Latvia
Lithuania	Government body	Ministry of the Economy and Innovation
	Government body	Public Employment Service, Monitoring and Analysis Department
	Government body	Innovation Agency Lithuania
	Employer organisation	Lithuanian Business Confederation
	Employer organisation	Association of Lithuania Chambers of Commerce, Industry and Crafts
	Employer organisation	Infobalt
	Academia or research organisation	Vilnius University Business School
	Training or digital solutions provider	Women4Cyber
Luxembourg	Employer organisation	Chamber of Skilled Trades and Crafts
Netherlands	Government body	Ministry of Economic Affairs
	Employer organisation	Confederation of Netherlands Industry and Employers (VNO-NCW)
	Academia or research organisation	Panteia
	Training or digital solutions provider	Platform Talent voor Technologie en smart industry
Norway	Government body	Innovation Norway
	Employer organisation	SMB Norge
Poland	Government body	Ministry of Economy Development and Technology, Digital Economy Department
	Government body	Former Ministry of Digital Affairs (2015–2018)
	Employer organisation	Polish Craft Association/Chamber of Crafts and Small and Medium-sized Enterprises in Katowice
	Training or digital solutions provider	Family Business Foundation
Portugal	Employer organisation	Portuguese Commerce and Services Confederation (CCP)
	Academia or research organisation	Nova School of Science and Technology, Nova University Lisbon
Romania	Employer organisation	National Council of Small and Medium-sized Enterprises in Romania
	Trade union	National Trade Union Bloc
Slovenia	Government body	Directorate of the Internationalisation, Entrepreneurship and Technology at the Ministry of the Economy, Tourism and Sport
Spain	Employer organisation	Spanish Confederation of Small and Medium-sized Enterprises
Sweden	Government body	Swedish Agency for Economic and Regional Growth
	Employer organisation	Confederation of Swedish Enterprise
	Trade union	Unionen

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This report discusses the digital transformation of small and medium-sized enterprises (SMEs) in the European Union, highlighting its importance for their competitiveness and the EU's economy. The report explores the degree of digitalisation in SMEs in the EU, including the adoption of digital technologies, e-commerce and e-business practices. It also examines the impact of the COVID-19 pandemic on SMEs' digitalisation and identifies key challenges, including lack of infrastructure, financing and digital skills. In addition, the report reviews policy frameworks and support measures related to digitalisation and the development of digital skills in SMEs. Furthermore, it presents an empirical analysis of how digital technology use is related to job quality at the workplace level.

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