

# SME Digitalisation to manage shocks and transitions:

## *2024 OECD D4SME survey*



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Although uptake of digital practices by SMEs continues to increase, so too has the “digital gap” with larger firms. Understanding the drivers and persisting bottlenecks of SME digitalisation as well as gaining a deeper understanding of their practices and digitalisation processes is key to inform policy decisions to help bridge this gap. This is the primary purpose of the survey this paper draws its findings from, conducted in seven OECD countries (France, Germany, Italy, Japan, Korea, Spain and the United States), in co-operation with digital platforms partners of the OECD D4SME Global Initiative. Survey findings provide new insights on SMEs’ digital journeys and how digital tools can support them in navigating short-term challenges and enhancing long-term resilience. The survey also provides evidence about SMEs’ use and perception of AI technologies (with a focus on “generative AI”), their application of data analytics for tracking environmental performance, and the impact on mental wellbeing of digital practices in the workplace.

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The initiative places emphasis on the diverse opportunities and needs for the large and diverse population of non-ICT SMEs and entrepreneurs that are at different stages of their digitalisation path and on their role for an effective, inclusive, and sustainable digital transition of economies.

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# Table of contents

Acknowledgements	3
Executive Summary	6
1 SME Digitalisation to Manage Shocks and Transitions	9
Digitalisation as a source of resilience for SMEs	9
Challenges in getting digitalisation right for SMEs	14
2 The 2024 D4SME Survey: A deep-dive into SME Digitalisation	16
Sample profile	16
Results: Exploring SMEs' multi-faceted digital journey	19
Special dimensions of the digital transformation	33
Government supports for digitalisation	40
Notes	49
References	51
Annex A. Methodology and questionnaire	55

## FIGURES

Figure 1. Businesses' broadband connection, by download speed	12
Figure 2. The digital gap between large and small businesses is growing.	13
Figure 3. Access to fast broadband in rural and remote areas continue to lag behind	14
Figure 4. Size of respondent businesses	17
Figure 5. Age group of respondent businesses	17
Figure 6. Sector of respondent businesses	18
Figure 7. Gender and position of respondents	19
Figure 8. Business' Internet connectivity satisfaction	20
Figure 9. Satisfaction with internet connectivity of Japanese businesses at the regional level	20
Figure 10. Reasons for unsatisfactory Internet connection	21
Figure 11. Businesses' perception on level of digitalisation of core activities and degree of satisfaction	22
Figure 12. Barriers to digital tool adoption by businesses considering they are "Not digitalised"	23
Figure 13. Businesses' objectives for digitalisation	24
Figure 14. Reasons for not being satisfied with their level of digitalisation	25
Figure 15. Businesses' preferred method for implementing digitalisation	26
Figure 16. Types of assistance provided to help employees adapt to digitalisation changes	27
Figure 17. Businesses using data for decision making	28
Figure 18. Number of cybersecurity measures implemented by businesses	29
Figure 19. Types of cybersecurity measures implemented by businesses	29
Figure 20. Businesses having experienced cyberbreach	30

Figure 21. Online and offline presence of respondent businesses	31
Figure 22. How businesses acquire digital skills	32
Figure 23. Businesses' preferred sources in finding external digital expertise	32
Figure 24. Types of skills programmes implemented to foster digital skills within workplace	33
Figure 25. Respondents' opinion on the impact of generative AI on their business	34
Figure 26. Word frequency analysis of respondents' perception on the impact of generative AI	35
Figure 27. Types of AI used by businesses	36
Figure 28. Businesses monitoring their environment impact	37
Figure 29. Impact of digitalisation on respondents' mental well-being	39
Figure 30. Businesses aware of government supports for digitalisation	41
Figure 31. Awareness and uptake of government supports for digitalisation	42
Figure 32. Word frequency analysis of respondents' views on government support for digitalisation	42
Figure 33. Source of information for government supports	44
Figure 34. Type of supports received by the businesses	45

## BOXES

Box 1. Selected examples of digitalisation experiences of SMEs in New Zealand and the UK	10
Box 2. What is a Large Language Model and why is it relevant to SMEs	11
Box 3. Survey respondents' perceptions of Generative AI	35
Box 4. Government policies to promote health and well-being in the workplace	38
Box 5. Recent OECD survey findings on the impact of AI in the workplace	39
Box 6. Challenges identified by respondent businesses regarding public support for digitalisation.	42
Box 7. Support for the digitalisation of Colombian businesses: "Fábricas de Productividad y sostenibilidad"	45

# Executive Summary

**Digitalisation can increase the resilience of small and medium sized enterprises (SMEs) to external shocks; however, there are widening gaps with larger firms.** The rapid uptake of digital tools during the COVID-19 pandemic well illustrated their crucial role in sustaining business continuity. More generally, digital tools enable SMEs to streamline operations, operate flexibly and diversify revenue streams, helping them withstand external shocks, including supply chain disruptions, inflation and tighter credit conditions (OECD, 2023<sup>[1]</sup>; OECD, 2023<sup>[2]</sup>). Despite progress however, recent data suggest that SMEs have not kept pace with large enterprises in digital adoption. As a case in point, despite increased uptake of cloud computing services, SMEs' gap with large businesses widened between 2020 and 2021.

**This report aims at providing policy makers with a better understanding of the determinants of this widening gap in digital uptake between larger and smaller firms, leveraging the results of a survey of SMEs in seven OECD countries.** Based on new evidence from an OECD Digital for SMEs (D4SME) Global initiative survey conducted in seven OECD countries (France, Germany, Italy, Japan, Korea, Spain and the United States), this report presents key trends in SME adoption of digital tools and practices. The survey offers evidence on the digital maturity and practices of respondent SMEs, including, on Generative AI and impact of workplace digitalisation on mental wellbeing. The survey also looks at awareness and take up of government support for digitalisation and includes a number of examples of recent policy measures to support SME digitalisation that could impact the gap. The survey targeted self-entrepreneurs, micro-, small and medium-sized enterprises operating on digital platforms managed by four private sector partners Amazon, Intuit, Kakao, and Rakuten. This implies that all businesses in the sample have by construction at least a basic level of digitalisation as they actively use these platforms. Additional business cases were provided by SMEs cooperating with the Bogotá Chamber of Commerce, Colombia.

**It's important to note that the D4SME Survey was conducted on a sample of SMEs in 7 OECD countries drawn from a distinct set of digital platforms and so cannot, necessarily, be considered as being representative of the entire universe of SMEs in those countries or indeed the OECD.** Indeed, while the size distribution broadly aligns with countries' official statistics the sector distribution is skewed towards retail and wholesale. The D4SME Survey gathered responses from 1 005 SMEs from Japan (561), Korea (249), Europe-4 (113, combining France (44), Germany (15), Italy (33), and Spain (21)), and the United States (82)<sup>1</sup>.

**Key drivers of SME digital adoption include its ability to increase sales, drive efficiency and boost resilience.** Increasing domestic sales, and, in relation, customer base expansion are primary objectives for adoption of digital tools in 47% and 41% of respondents respectively. Automation, boosting efficiency, is a key driver of uptake for 40% of businesses, especially within the professional services sector (48%) and more digitally mature businesses (48%). Reducing operational costs is on average a greater priority for businesses that operate exclusively online (29%) or solely in-person (25%) than hybrid businesses (19%). This is in line with findings from an earlier study, the "2022 Hybrid retail D4SME survey" (OECD, 2023<sup>[3]</sup>).

**Most respondents leverage data to support strategic decisions.** A large majority of respondents (72%) use data to support decision-making, underscoring the pivotal role of data-driven insights in modern business strategies. Businesses that have digitalised most of their activities report higher use (77%) than their less digitalised peers (63%). The results show that the larger the business, the more likely it is to use data for decision making, (64% of self-entrepreneurs, 70% of micro businesses, and 76% of small and medium businesses) but the sector of activity does not seem to have a sizable impact. Further, businesses that make decisions supported by data tend to be more satisfied with the results of digitalisation – 74% indicate satisfaction against 67% of businesses not using data in their decision-making process. Around a third of respondents (34%) implement digitalisation through top-down approaches, with managers or owners leading decisions on how to digitalise, while only 13% of businesses have a “bottom-up” approach with employees proposing solutions to managers. Also, around one in five respondents (19%) indicated that they do not have a structured process.

**Over 1 in 4 SMEs point to bottlenecks to digitalisation, such as costs and skills shortages, including a lack of time for training.** In addition, many SMEs have made limited progress in adopting strong digital security practices, with 18% of SMEs having no cybersecurity measures in place, 44% having either one or two, mostly elementary ones, such as anti-virus software and two-factor authentication, while the remaining 38% have more than three measures in place. In the sample, 1 in 3 businesses in the European countries covered were aware of having been the target of cyber-attacks, compared to only 1 in 20 in Japan.

**Survey results highlight the need for improved digital skills development programmes among SMEs, particularly to foster flexibility, inclusivity, and well-being at work.** While 54% of respondents report they have some type of skills programme for the development of digital skills in the workplace, they mostly refer to peer learning (22%), informal learning or online courses provided by platforms (10%). At the same time, 46% of respondents indicate they do not have any programme in place to help employees cope with changes: only about 1 in 10 businesses provide specialised training(s) and less than 1 in 10 provided psychological support to employees.

**Survey findings underscore the potential to accelerate the uptake of digital tools to monitor environmental impact.** Across the entire sample, 40% of businesses report they track their environmental performance (e.g. carbon footprint, energy efficiency), with energy monitoring systems or smart meters being the most popular applications. However, less than half (47%) of the businesses that selected reducing energy consumption as a key objective in digitalising, report monitoring their business’ environmental impact.

**SMEs have rapidly embraced Generative AI tools and have a positive view about them.** “Generative AI” services represent the most common AI application cited by responding SMEs, utilised by close to 1 in 5 respondents (18%) less than a year after LLMs became available to the public at the end of 2022. Moreover, 57% of respondents reported a view that opportunities associated with generative AI features surpassed the risks, particularly those in managerial positions with 62%, compared to 59% of self-entrepreneurs and 48% of non-manager employees. Overall, only 1 in 4 respondents indicate they are using an application of AI in their main operations or products, either actively, by leveraging generative AI services or developing custom AI systems, or passively, by using platforms that embed AI functionalities. However, by construction, the sample only includes SMEs active on large digital platforms, all of which have embedded “machine learning” algorithms in their services, which means that 100% of respondents are actually at least indirectly using AI. Only a small share of respondent businesses acknowledges or are aware of this “passive” use, with just 1 in 20 respondents recognising they use digital tools with AI functions. Adoption of AI technologies appears to be influenced by the digital maturity, with 35% of mostly digitalised businesses reporting their use.



**On average and across surveyed geographies, less than 1 in 5 SMEs are aware of government support for the adoption of digital tools.** A higher number of responses from Japan and Korea enabled further analysis of take-up of government supports. In addition, among respondents who were aware, respondents highlighted concerns about the suitability of programmes to their digital needs, red tape to access programmes and capacity challenges to sustain digital improvements after the completion of the support programme.

# 1 SME Digitalisation to Manage Shocks and Transitions

## Digitalisation as a source of resilience for SMEs

**Digitalisation can bolster the resilience of small and medium-sized enterprises (SMEs), enabling them to adapt to major transitions and adjust to significant disruptions.** As recognised in the *OECD Declaration on Enhancing SMEs and Entrepreneurship Policies for Greater Resilience and Successful Green and Digital Transitions* and the *Recommendation of Council on SME and Entrepreneurship Policy* (OECD, 2023<sup>[1]</sup>; OECD, 2022<sup>[4]</sup>), future-proofing SMEs is key to increase the resilience of economies and societies. Across OECD countries, SMEs are main drivers of employment (69% of business sector jobs on average), turnover (59%), and exports (45%) and play a key role in production and knowledge networks (OECD, 2023<sup>[5]</sup>). Their active participation in the digital economy is essential for aggregate productivity and competitiveness, and for inclusive and sustainable growth.

**Digitalisation improves access to business tools for resource-constrained SMEs.** The advancement of digital technologies and the emergence of novel digital services offer small businesses improved access to essential business tools, making it easier for them to enhance operations without incurring large upfront and maintenance investment (OECD, 2019<sup>[6]</sup>). For instance, cloud computing solutions offer businesses increased flexibility in using ICT resources, on a “pay-as-you-go” basis (Software-as-a-Service), in contrast to traditional on-premises models with higher upfront costs (e.g., hosting a server to manage, store, and analyse company data) (OECD, 2021<sup>[7]</sup>).

**Digital solutions lower SMEs’ barriers in experimenting and adopting new business practices.** Digital tools make it easier for small businesses to try out innovative solutions. For example, small businesses can test their ideas at a small scale before fully dedicating their resources. This enables, flexibility and agility in adapting to changing market conditions. Online sales represent a case in point, since businesses can readily tap into digital sales channels with low upfront investment in terms of time and financial resources, including commission-based e-commerce and delivery platforms. They can assess whether it is worthwhile to pursue and expand a particular channel. Survey evidence shows that a large number of SMEs find that doing so effectively broadens their customer base (OECD, 2023<sup>[3]</sup>).

**The role of digitalisation in strengthening SME resilience strongly emerged in the context of a series of shocks that hit the global economy since 2020.** In the face of unprecedented disruptions, a large share of SMEs was able to continue, expand or pivot their operations by embracing digitalisation (OECD, 2021<sup>[8]</sup>), including by leveraging government support programmes, or trainings offered by universities and private sector partners (Box 1).

### Box 1. Selected examples of digitalisation experiences of SMEs in New Zealand and the UK

#### How a New Zealand retail SME enhanced its digital presence and resilience to external shocks.

*Rum & Que* is a New Zealand micro-enterprise operating in the food and beverage sector. They manufacture and distribute kitchen products, with a focus on seasonings and sauces. Similar to many SMEs, lockdown measures and other COVID-19 pandemic restrictions prompted *Rum & Que* to enhance their digital presence. With the help of a consultant from the Digital Boost programme by the New Zealand government, they revamped their website, integrating an e-commerce function. *Rum & Que* now also makes use of other digital tools, including accounting software to manage financials and an external digital tool to centralise orders and manage accounting. Despite rising cost of production through 2022 and 2023, due to the increase in costs from their suppliers, *Rum & Que* have been able to keep their prices constant as a result of the efficiency gains they made by using digital tools. Originally launched in 2021 in response to the COVID-19 pandemic, the Digital Boost programme has now become an integral part of New Zealand's SME Digital Strategy Framework due to its success.

#### How the use of digital tools enabled a Scottish SME to overcome challenges related to rural location.

As an SME located in rural Scotland, the *Building Workshop* has faced challenges related to their isolated location such as difficulties accessing reliable digital infrastructure. The adoption of digital technologies has been instrumental into the firm operating completely remote, and overcoming barriers related to its rural location. One year into starting their business, in 2010, the Building Workshop won a corporate competition, which assigned GBP 1 000 to spend on the purchase of BIM architecture software. Their local authority in Scotland matched 50% of the cost of the training to learn to use this new software. The use of building information modelling (BIM) software and a 3D model approach, as well as social media, cloud storage and video conferencing, were key in helping them overcome challenges related to their location and widening their customer base. To overcome her lack of digital skills, one of the cofounders further enrolled in a course from a higher education institution in the United States, where she gained soft skills that enabled her to redesign her business' systems and processes to operate digitally. Since completing the program in 2020, the founders observed an increase in turnover of 50% in 2021, with a larger number of projects of higher value being accepted.

Source: SME Visualisation tool, OECD Digital for SMEs Global Initiative. Available at: <https://www.oecd.org/stories/sme-experience/>

#### In addition to short-term resilience, SMEs can gain long-term advantages through digitalisation.

Gal et al. (2019<sup>[9]</sup>) show evidence of the association between firm's digital adoption and productivity benefits, albeit at varying degrees, depending on the firms' characteristics. Similarly, DeStefano, Kneller and Timmis (2020<sup>[10]</sup>) find that small firms adopting cloud computing are more likely to experience growth of employment and revenue. Further, digitalisation is identified as one of the important scaling up drivers for small businesses willing to grow, providing SMEs with various prospects to enhance their performance, increase productivity, and compete with larger enterprises on a more even footing (OECD, 2022<sup>[4]</sup>; OECD, 2021<sup>[11]</sup>). SMEs can also pursue more sustainable business practices through use of software-based energy efficiency technologies, such as measurement tools for understanding energy consumption in real-time, and optimising energy use via automation (OECD, 2023<sup>[12]</sup>).

**Generative Artificial Intelligence (AI) tools exemplify how digital tools enable SMEs to achieve more with fewer resources.** Large Language Models (LLMs), commonly referred to as "Generative AI", are a type of models with the capacity to generate original<sup>2</sup> content in response to "natural language queries" (meaning questions asked in common language), such as text, image, and video (Box 2). This resource can rather immediately augment creativity and facilitate innovations in businesses. By helping automate

manual and repetitive tasks, they free up human resources for tasks that demand greater complexity and creativity (Eapen et al., 2023<sup>[13]</sup>). For instance, automating customer service, generating marketing content, language translation and content personalisation are just a few examples of how SMEs can leverage text generative AI tools (Bianchini, 2023<sup>[14]</sup>). Implementing generative AI in businesses has shown to improve productivity, with a noticeable impact on new and low-skilled workers (Brynjolfsson, Li and Raymond, 2023<sup>[15]</sup>). As digital tools integrate generative AI functionalities in their offering, SMEs gain easier access to AI capabilities, enabling a direct and simpler adoption of AI technology (OECD, 2021<sup>[8]</sup>).

## **Box 2. What is a Large Language Model and why is it relevant to SMEs**

### **LLMs as a flexible and easily accessible tool**

Large Language Models (LLMs), such as GPT (Generative Pre-trained Transformer), are advanced artificial intelligence tools designed to understand, generate, and interact with human language. Developed through the processing of extensive textual data, these models are trained to predict the likelihood of a sequence of words, thereby enabling them to compose coherent and contextually relevant text responses. The core mechanism behind LLMs involves the analysis of word patterns and relationships within a vast corpus of text, ranging from literature to online articles, which allows them to generate responses that can mimic human-like understanding.

The versatility of LLMs is evident in their wide range of applications, including but not limited to language translation, content creation, customer service automation, and educational tools. Their ability to process and generate language in a human-like manner has significant implications for improving efficiency and accessibility in communication technologies, education, and information retrieval systems. Furthermore, LLMs play a pivotal role in advancing natural language processing technologies, contributing to more intuitive human-computer interactions.

However, the deployment of LLMs also raises important considerations regarding ethical use, bias mitigation, and data privacy. The data used to train these models can reflect existing societal biases, which necessitates efforts to ensure that LLM outputs are equitable and do not perpetuate harmful stereotypes. Additionally, the transparency and accountability in the development and deployment of these models are crucial to address potential implications for data privacy and security.

In summary, Large Language Models are a cornerstone of contemporary AI research, offering promising advancements in natural language processing. Their development and application, while beneficial, require careful consideration of ethical, social, and technical challenges to maximize their positive impact on society.

### **LLMs for SMEs**

LLMs are particularly suited for the needs of SMEs in key areas such as customer relations, marketing, and strategy. For basic use (i.e., image and text generation based on direct prompts) advanced LLM (both private and open source) are accessible either for free or for relatively low fixed monthly subscriptions. This makes them well within the reach of interested SMEs. Furthermore, the fact that they can process queries formulated in “natural language” means that SME managers and employees alike do not need any formal training to use the software for their specific needs. At the same time, more advanced uses leveraging Application Programming Interfaces (APIs) of such models would require additional understanding and capabilities.

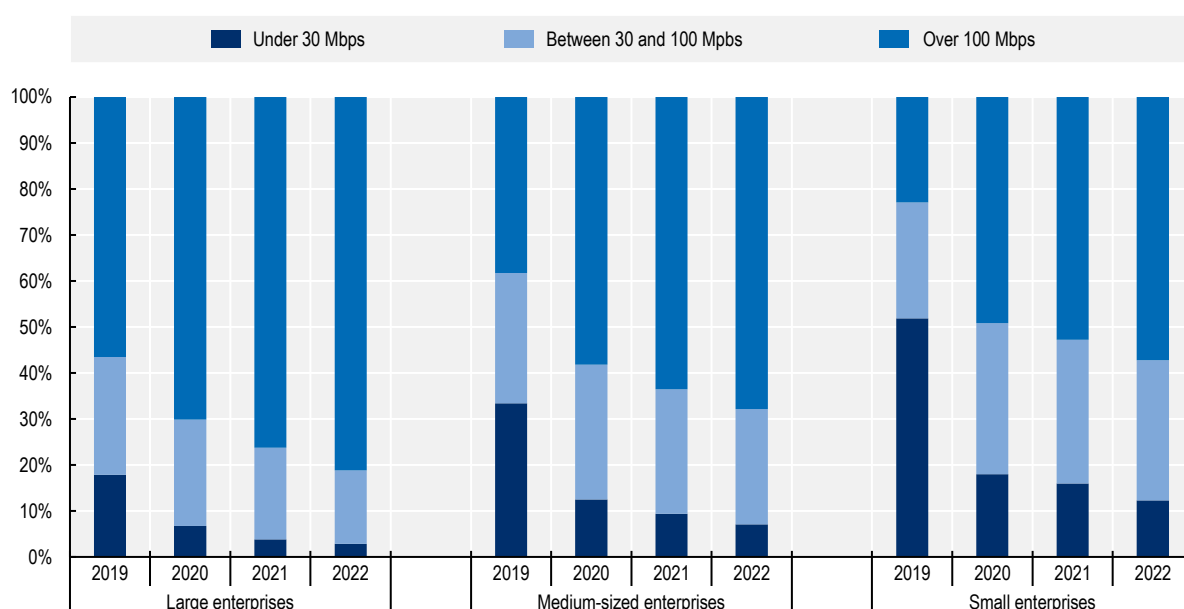
Note: Please note that the “LLM in short” section, has been generated by an LLM itself (ChatGPT4) – as a dynamic and direct way to show what such models can produce in terms of text.

Source: ChatGPT4 (co-author); (Bianchini, 2023<sup>[14]</sup>)

**The digitalisation of SMEs has improved over the past years and has accelerated since the COVID-19 pandemic.** While the rate of digital adoption among SMEs has increased over the past years compared to the pre-pandemic level, a particularly noticeable change can be observed in SMEs' adoption of high-speed internet (Figure 1). While around two-thirds of medium-sized enterprises across the OECD had access to broadband higher than 30 Mbps before the pandemic, the share significantly increased to 94% in 2022. Similarly, the share of small enterprises in the OECD economies with broadband higher than 30 Mbps stood at 48% in 2019, but then rose to 89% three years later. As a larger share of the SME population are now connected to more than basic-broadband, connectivity to high-speed networks has also become more common. The share of SMEs with ultra-fast broadband of more than 100 Mbps significantly increased, with medium-sized businesses' adoption rate raising from 38% and 23% in 2019 to 65% and 52% in 2022 respectively, indicating an improvement in SME digital connectivity.

**Figure 1. Businesses' broadband connection, by download speed**

As average percentage of enterprises across OECD economies, 2019-2022



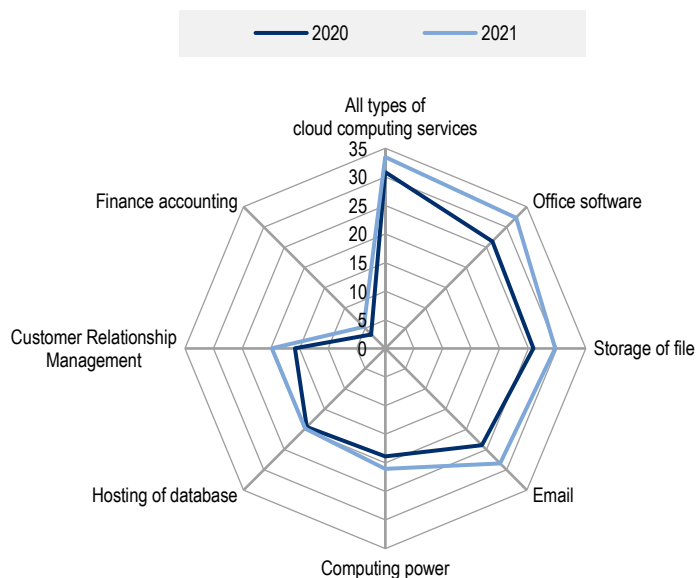
Note: Typically, broadband with speed under 30 Mbps is defined as 'Basic broadband', 'Fast broadband' for speeds between 30 and 100 Mbps, and 'Ultra-fast broadband' for speeds higher than 100 Mbps.

Source: OECD (2023<sup>[16]</sup>), ICT Access and Usage by Businesses (accessed on 18 September 2023).

**Despite the progress in SMEs' digital adoption, the digitalisation divide between large enterprises and SMEs has widened.** Indicators highlight that SMEs have not kept pace with larger enterprises in their digitalisation efforts, with adoption of cloud computing being case in point (Figure 2). In 2021, the share of small businesses acquiring cloud computing services was at 41%, a 3% increase from the year before. However, the lag with respect to large businesses increased from 31% to 33% in the same period. The trend can be observed in all types of cloud computing services, with the largest gap increase for office software (6 percentage points), followed by email services (5 percentage points). Further adoption gaps can be observed on the use of more advanced digital technologies such as AI (any type, not only LLMs - (Calvino and Fontanelli, 2023<sup>[17]</sup>)).

**Figure 2. The digital gap between large and small businesses is growing.**

Percentage difference in uptake of cloud computing services between large enterprises and small enterprises, 2020-2021

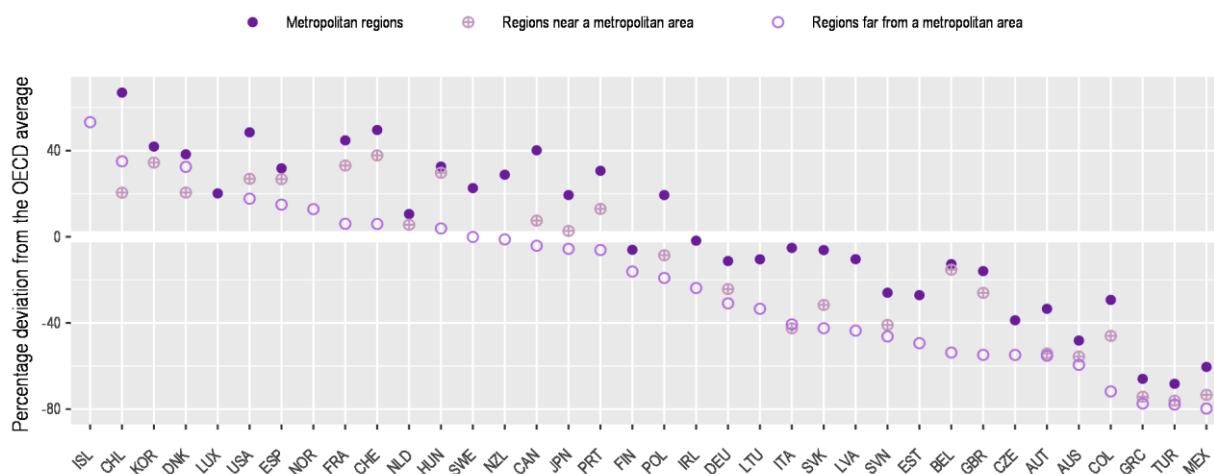


Source: OECD (2023<sup>[16]</sup>), ICT Access and Usage by Businesses (accessed on 18 September 2023).

**Attention is also needed on the urban-rural digital divide within the SME population.** While SMEs in urban areas often enjoy better digital infrastructure at an affordable price, SMEs based in rural areas may face challenges in accessing quality digital infrastructure, which can hinder their operation. Advancements in digital infrastructure, such as 5G and satellite internet, along with government supports facilitate businesses' access to broadband, but access in rural and remote areas continues to lag behind (Figure 3). In terms of broadband speed, disparities across cities can be pronounced with the digital gap between the better-off and worse-off cities reaching more than 80 percentage points in some OECD countries (OECD, 2022<sup>[18]</sup>). Lack of talent in rural areas can also pose challenge for rural SMEs, as they may experience more difficulties in finding people with digital skills than their counterparts in urban areas. For example, Eurostat's study on differences in digital skills between cities and rural areas across EU members finds that 20% of the population living in rural areas had above-basic overall digital skills, which is 13 percentage points less than those living in cities (Eurostat, 2023<sup>[19]</sup>).

### Figure 3. Access to fast broadband in rural and remote areas continue to lag behind

Percentage deviation from OECD average, by type of region, weighted averages of small regions (TL3), 2022 Q1



Note: TL3 indicates Territorial Level 3, which is the OECD metropolitan/non-metropolitan typology for small regions.

Source: OECD, Regions and Cities at a Glance, 2022 (OECD, 2022<sup>[18]</sup>)

### Challenges in getting digitalisation right for SMEs

The lag observed in the adoption of digital tools and services by SMEs stems from various obstacles, including insufficient access to finance and limited organisational capabilities. Limited access to financial resources for SMEs, coupled with tightening conditions in recent years, including increased interest rates and reduced credit availability may impede investment in digital transformation (OECD, 2024<sup>[20]</sup>). However, digital adoption encompasses more than just investments in technical equipment like hardware and software, investments in organisational adjustments and skill development, such as training, are key to achieve desired effectiveness (Chamorro-Premuzic, 2021<sup>[21]</sup>; Leinwand and Mani, 2021<sup>[22]</sup>). Recent evidence from a survey on Canadian SMEs conducted between November 2021 and January 2022, shows that many SMEs face barriers in this regard. For instance, results indicate that only around one-third of the businesses either conducted or were considering conducting a diagnosis of their business as part of their digitalisation process (SOM, 2022<sup>[23]</sup>), conveying limited organisational capabilities. Additional barriers that hamper SMEs' adoption of digital technologies include their lack of capacity to adapt to changing regulatory frameworks in the field of data privacy, or the lack of awareness and understanding of digital security (OECD, 2021<sup>[8]</sup>).

Existing research strongly indicates that broad digital skills among both employees and managers, beyond ICT specialists, are crucial for digital adoption to yield positive results (OECD, 2021<sup>[8]</sup>; Gal et al., 2019<sup>[9]</sup>). Broad-based complementary investments are key to effectively leverage digital services, as well as, in the first place, to see the benefits of digitalisation and scale up digitalisation efforts. To illustrate, a survey conducted between April and March 2022 on SMEs in Australia and New Zealand revealed that approximately 40% of the surveyed businesses discontinued using some digital solutions as they were not able to observe any efficiency gains (myob, 2022<sup>[24]</sup>).

Generative AI tools present great potential for SMEs, however, it is crucial to ensure that they are able to navigate challenges related to copyright, hallucinations, and spreading of misinformation associated with the use of this technology. As previously discussed, the wide range of applications of generative AI, its user-friendly interface design and "natural language query" capability have led to a wide

take up of this technology among SMEs (see Section 2, Generative Artificial Intelligence). However, the technology is not flawless, and some challenges have started to emerge. These include copyright and privacy concerns or spreading of inaccurate information amongst others (McAfee, Rock and Brynjolfsson, 2023<sup>[25]</sup>). Promoting a use of AI that is innovative as well as trustworthy is crucial for SMEs to explore its strategic potential and securely leverage its benefits. The *OECD Recommendation on AI*, adopted in 2019, draws special attention to SMEs in the implementation of national AI policies, underscoring the need to work closely with stakeholders to promote a responsible use of AI at work (OECD, 2019<sup>[26]</sup>). The recent “EU AI Act” places LLMs at the forefront, proposing comprehensive regulations to ensure safe, transparent, and ethical AI development and use (European Parliament, 2023<sup>[27]</sup>).



## 2 The 2024 D4SME Survey: A deep-dive into SME Digitalisation

Since 2022, the *OECD D4SME Global Initiative* has launched a yearly international survey with the aim to collect original evidence on the adoption of digital tools and practices by SMEs. The present survey is conducted by the OECD to collect granular evidence on the digital maturity of respondent SMEs and their digitalisation journey, by engaging with some of the partners from the OECD Digital for SMEs (D4SME) Global Initiative<sup>3</sup>. It encompasses critical areas including access to essential infrastructure, utilisation of data and the adoption of key technologies. Moreover, it delves into more than just the adoption of digital tools, exploring how businesses are aligning their objectives and practices to leverage these tools, and the role of policy support.

The present survey exercise gathered information from more than 1 000 SMEs across 7 OECD countries: France, Germany, Italy, Japan, Korea, Spain and the United States<sup>4</sup>. The survey was conducted between July and October 2023, gathering in total 1005 responses from Japan (561), Korea (249), Europe-4 (113, combining France (44), Germany (15), Italy (33), and Spain (21)), and the United States (82). It should be noted that, by construction of the sample, respondent SMEs already have at least a basic level of acquaintance with digital tools, as they are customers of digital platforms. Therefore, the results of the survey should not be considered as representative of the entire SME population in the surveyed countries. More detailed methodology and the questionnaire can be found in Annex A.

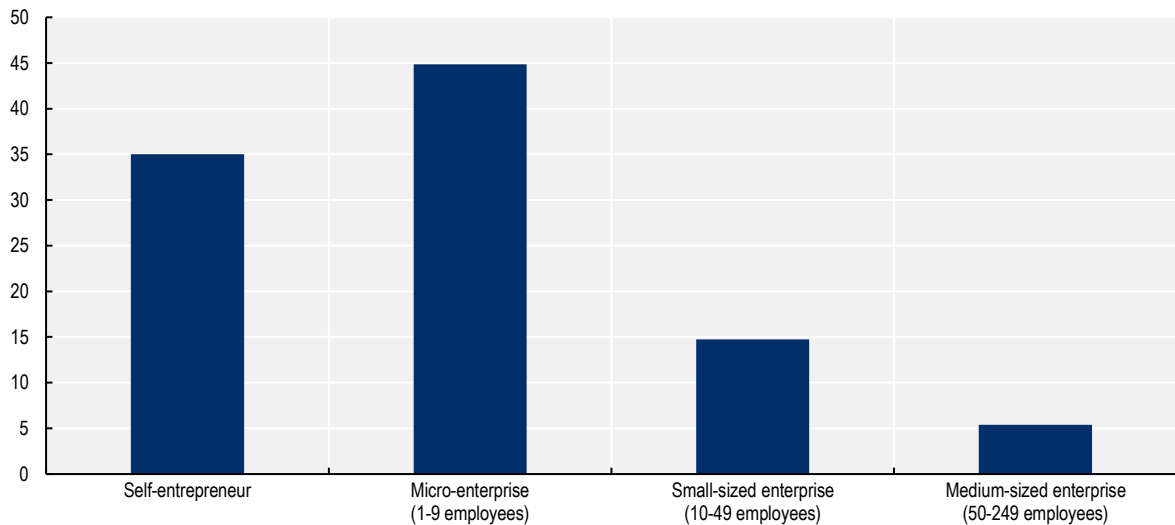
### Sample profile

#### *Business profile*

**Self-entrepreneurs and micro-businesses constitute 80% of the sample with small and medium-sized businesses representing the remaining 20% of the respondents.** Specifically, 45% of respondents describe themselves as micro-enterprises with under 10 employees and 35% indicated they are self-entrepreneurs (Figure 4). 15% of respondents described themselves as small businesses and 5% as medium-sized businesses with between 50-249 employees. While the composition of the sample is broadly in line with the business population across the OECD, small and medium sized businesses are over-represented. Across the OECD, self-entrepreneurs and micro-enterprises account for 91% of the business population, small businesses for 7% and medium sized businesses for 1% (OECD, 2020<sup>[28]</sup>).

**Figure 4. Size of respondent businesses**

As a percentage of the total number of responses

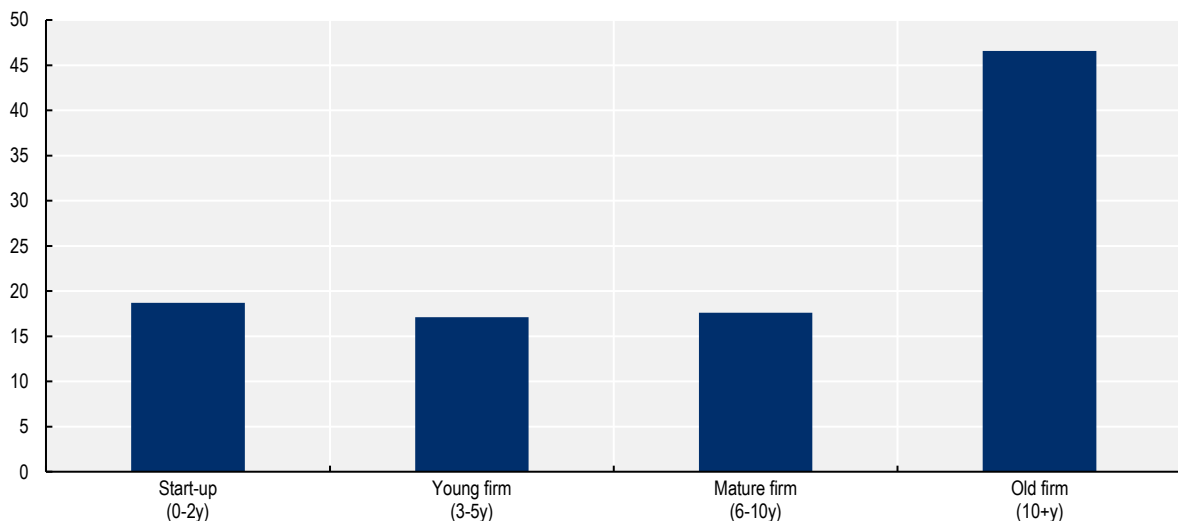


Source: 2023 OECD D4SME Survey.

**A large majority of respondent businesses across size categories have been in operation for more than ten years.** Nearly half (47%) of respondent businesses have been in operation for more than a decade (Figure 5) with other age brackets almost equally represented in the sample. 18% can be classified as mature firms, in operation between 6 and 10 years and 17% as young firms, in operation for between 3 and 5 years. Finally, 19% are start-ups, established between 2021 and 2023.

**Figure 5. Age group of respondent businesses**

As a percentage of total number of responses



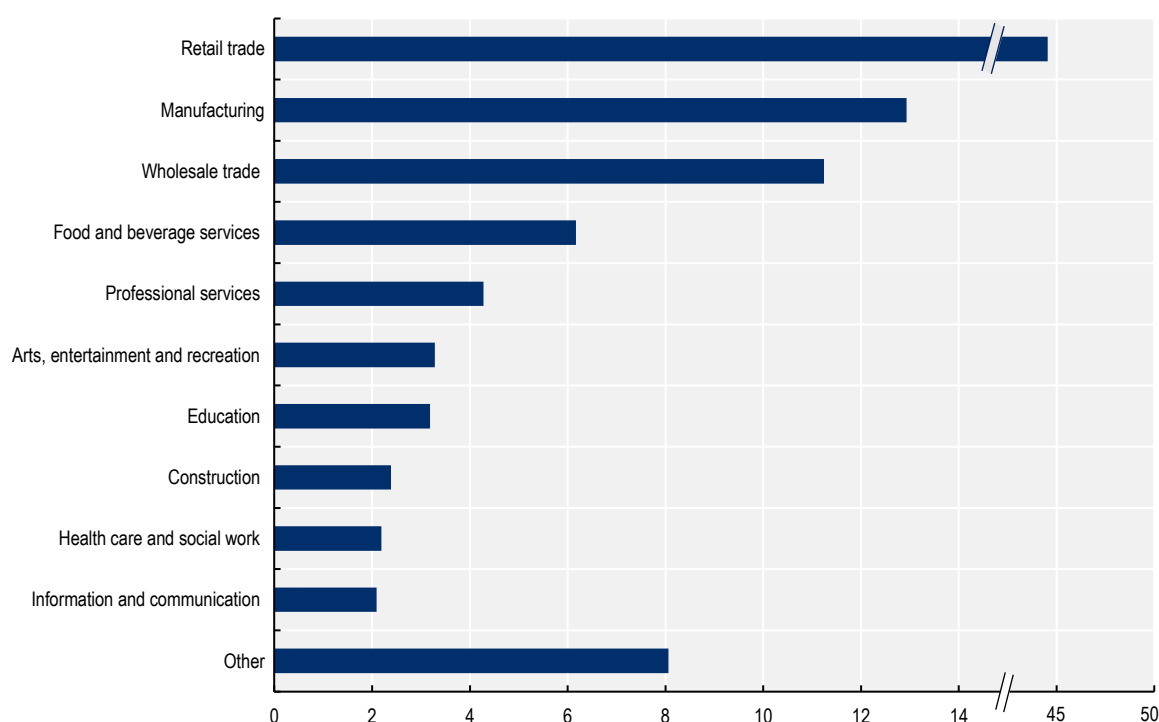
Note: Elaboration based on businesses' self-declared year of establishment.

Source: 2023 OECD D4SME Survey.

**Most respondent businesses operate in the retail sector.** As expected, due to the survey design, with a number of D4SME partners operating digital retail platforms distributing the survey to their SME network, 44% of respondent businesses indicate they operate in the retail sector (Figure 6). Other sectors represented in the sample include manufacturing (13%), wholesale trade (11%), food and services sector (6%), and professional services sector, encompassing technical and scientific services (4%).

**Figure 6. Sector of respondent businesses**

As a percentage of total number of responses



Note: Categorisation based on ISIC rev. 4 business sector classification, according to the businesses self-declared activities. Sectors under “Other” category include businesses operating in Accommodation, Administrative and support services, Agriculture, Electricity, gas, air conditioning, water and waste management, Forestry, and fishing, Public administration and defence, Real estate activities, and Transportation, postal and storage.

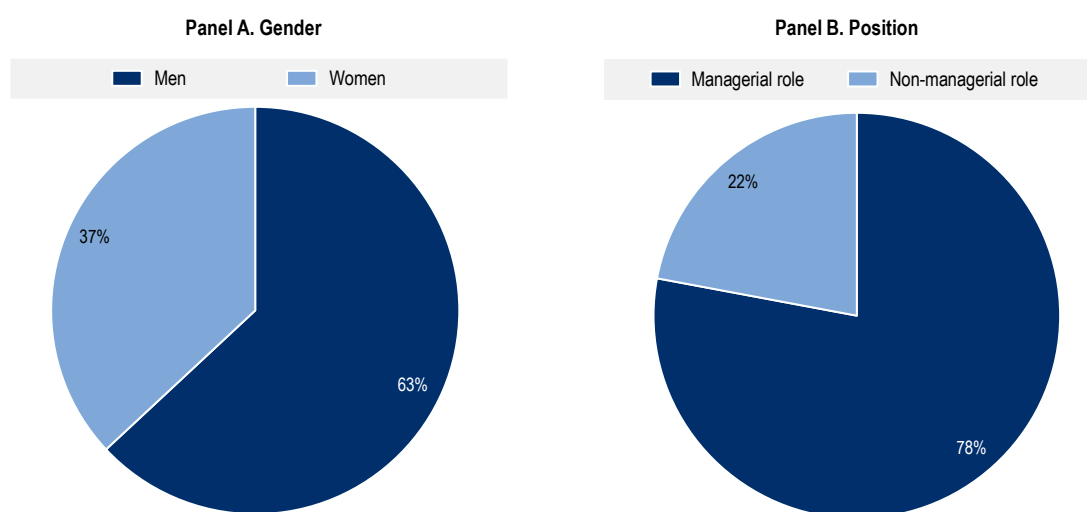
Source: 2023 OECD D4SME Survey.

## **Respondent profile**

**Respondents to the survey primarily consist of men in managerial roles.** The gender breakdown among survey participants reveals that 63% identified as men and 37% as women (Figure 7, Panel A). 60% of self-entrepreneurs are men and women are also less represented in managerial roles in SMEs, accounting for 29% of respondents in these positions against 55% of respondent employees. Overall, 78% of respondents indicated they occupied managerial positions, either as CEOs, managers or business owners, with the remaining 22% indicating they were employees (Figure 7, Panel B). This distribution is noteworthy, as it implies that a significant majority of respondents possess the authority to influence digitalisation initiatives within their respective businesses.

**Figure 7. Gender and position of respondents**

As a percentage of respondents



Note: Elaboration based on 912 responses that indicated both their gender and position within their business. Self-entrepreneur category is omitted on Panel B for comparison between respondents in managerial role and non-managerial role. Managerial roles include CEOs, business owners and managers.

Source: 2023 OECD D4SME Survey.

## Results: Exploring SMEs' multi-faceted digital journey

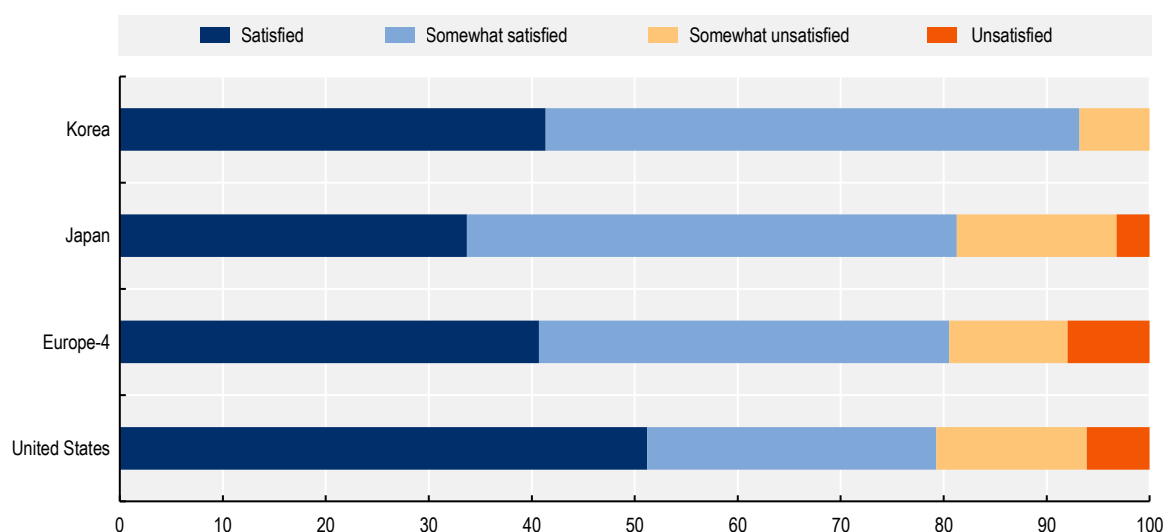
### *Self-assessments on connectivity and digital maturity*

**Businesses in overall are satisfied with their Internet connection.** On average across surveyed businesses, 86% indicate they were either satisfied or somewhat satisfied with the speed of their broadband connection, with some differences across geographies. Korean businesses stand out for their high level of satisfaction; none report outright dissatisfaction, and only a small fraction, 7%, express moderate dissatisfaction (Figure 8). Japanese businesses are the second most likely to indicate they were overall satisfied with their Internet connection. While over 1 in 2 US businesses indicate they are fully satisfied with their Internet connection; US respondents also exhibit the highest share of dissatisfied respondents with over 1 in 5 indicating some degree of dissatisfaction with their Internet connection. Lastly, Europe-4 countries exhibit the highest proportion of businesses expressing outright dissatisfaction with their Internet connection.

**Satisfaction with internet connectivity is not always aligned with broadband speed.** Evidence at regional level from Japan illustrates that there is no clear correlation between internet speed and overall satisfaction (Figure 9). To illustrate, respondents from Chugoku region express satisfaction with their Internet connection, more than businesses in other regions. Dissatisfaction is more pronounced in Hokkaido region, with around 50% of the respondents stating that they are not satisfied with their Internet connection. When juxtaposing the Internet satisfaction level with average Internet speed in each region, we can see that internet speed was also the least fast in Hokkaido.

**Figure 8. Business' Internet connectivity satisfaction**

As an average percentage of responses from the surveyed geographies

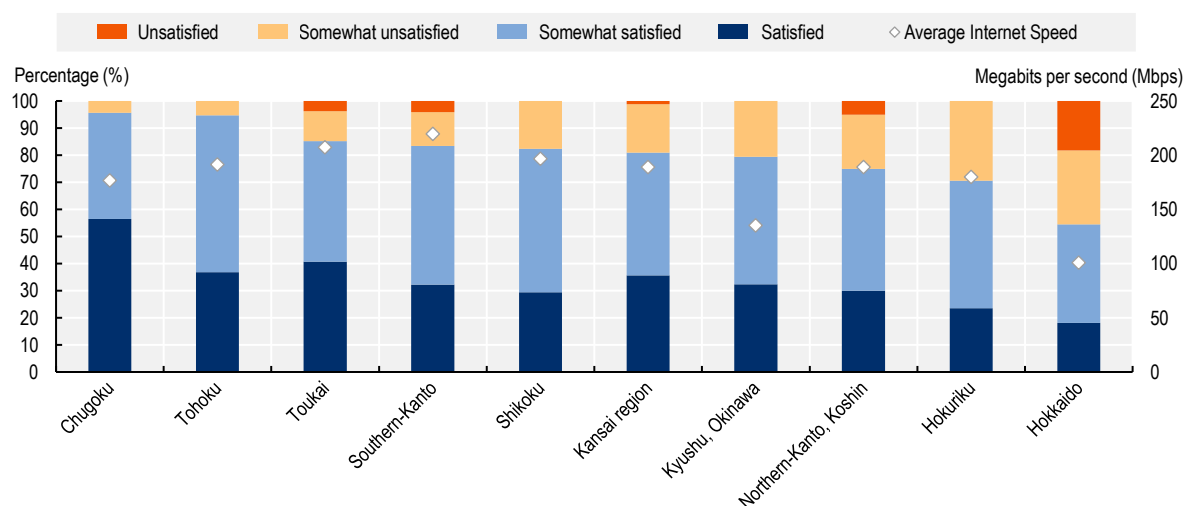


Note: Europe-4 includes responses from France, Germany, Italy and Spain.

Source: 2023 OECD D4SME Survey.

**Figure 9. Satisfaction with internet connectivity of Japanese businesses at the regional level**

As a percentage of responses, and Internet speed, TL2 Japanese region



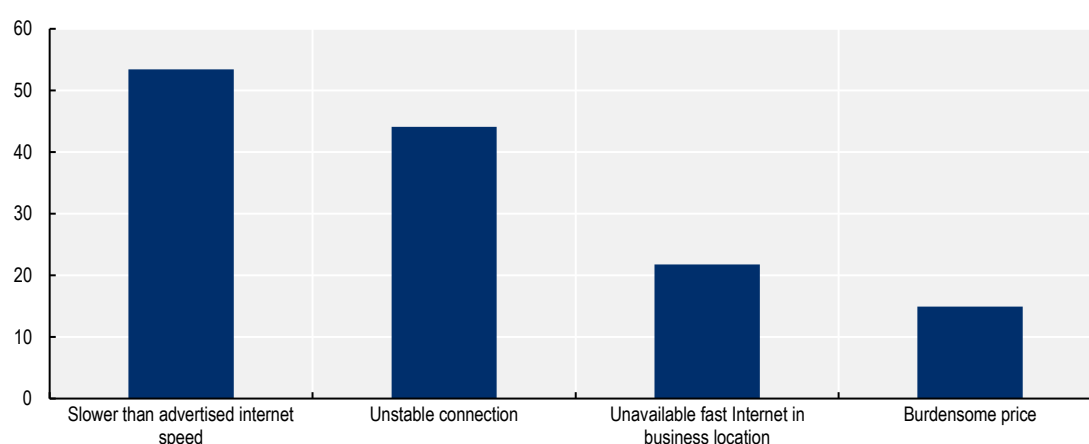
Note: Regional categorisation based on the OECD territorial level 2 (TL2) categorisation. Internet speed here refers to median download speed of fixed broadband connection recorded in the respective Japanese TL2 regions as of January 2024.

Source: 2023 OECD D4SME Survey, Ookla Speedtest (accessed on 26 February 2024).

**More than half of the businesses expressing dissatisfaction with their Internet connection attribute it to poor quality while the cost of high-speed access is the least cited concern.** Specifically, 53% of these businesses indicate slower than advertised internet speed as the primary reason for their discontent (Figure 10). Another significant concern among dissatisfied businesses is the instability of their internet connection, with 44% identifying this as a root cause of their dissatisfaction. Additionally, a notable portion of businesses—over 1 in 5—highlight the unavailability of fast-speed Internet in their location as a key issue affecting their satisfaction. The price of broadband is less of a problem, with 15% respondents expressing the expensive fast-speed Internet further contributes to their dissatisfaction.

**Figure 10. Reasons for unsatisfactory Internet connection**

As a percentage of respondents indicated unsatisfactory Internet connection



Note: Elaboration based on 161 responses. Respondents were given the possibility to select multiple answers.

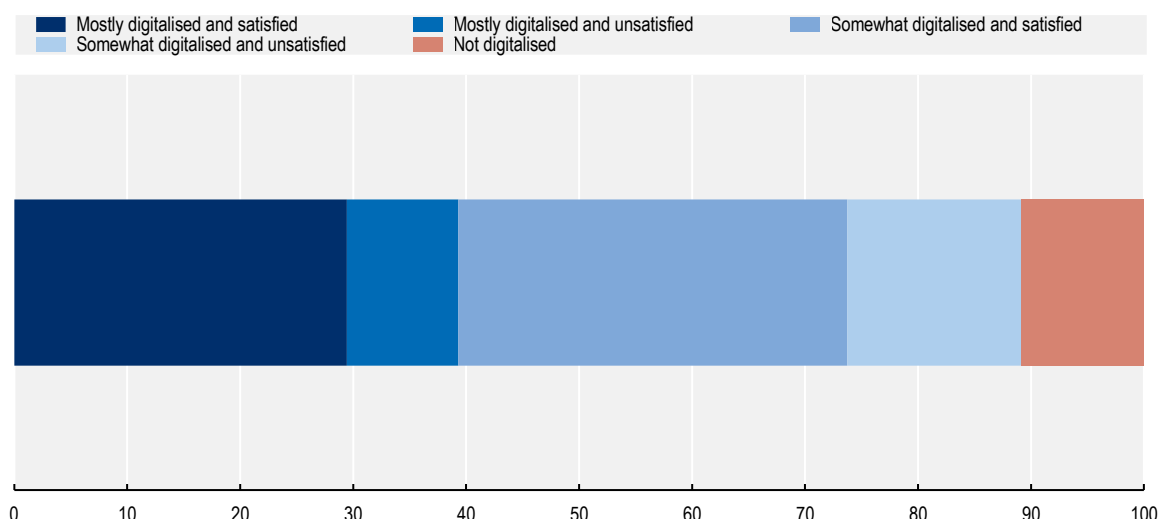
Source: 2023 OECD D4SME Survey.

**Most respondent businesses deem themselves to be digitalised with around 7-in-10 reporting that they are satisfied with the result of their digitalisation.** 89% of the businesses indicate that they digitalised some or most of their core activities (Figure 11)<sup>5</sup>. Among the 39% indicating they are mostly digitalised, three quarters express satisfaction, constituting approximately 29% of the entire sample. Another 50% of respondent businesses indicate they were somewhat digitalised with over two-thirds of them reporting satisfaction, equivalent to 34% of the entire sample. Overall, 72% of respondent businesses indicate they are satisfied with their level of digitalisation, which also implies noticeable share of businesses – more than one in four – that are not satisfied with the results from their digital transition. This sentiment is particularly widespread among respondents in the manufacturing sector, with 32% of manufacturing businesses indicating they are not satisfied with the results of digitalisation.

**Most businesses in the professional and service sector and in retail report they have digitalised most of their core activities.** Levels of digital advancement differ across sectors with 56% of respondents operating in the professional services sector and 52% of retailers indicating they are mostly digitalised. Conversely, this is only the case for 32% of businesses in wholesale trade, 24% of manufacturing firms and 15% of businesses operating in the food and beverage sector, more likely to report they have only digitalised some of their activities. While based on respondents' own perception of their level of digitalisation, these results still point at possible different levels of digital uptake across sectors.

**Figure 11. Businesses' perception on level of digitalisation of core activities and degree of satisfaction**

As a percentage of the total number of responses



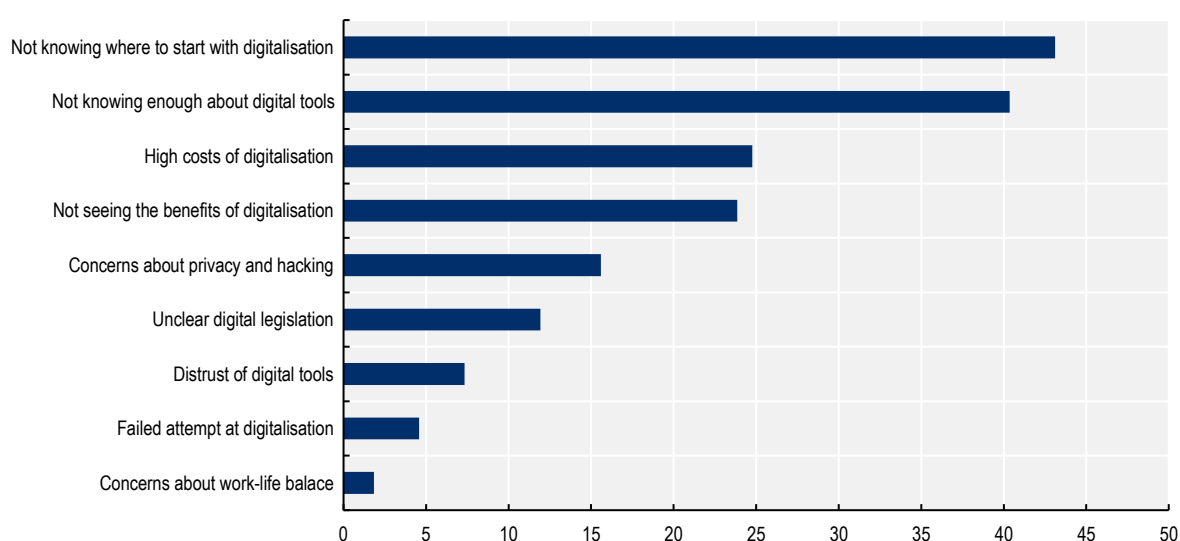
Note: Elaboration based on respondents' self-assessment on how their business uses digital tools for their core business activities and on their level of satisfaction with the results of digitalisation.

Source: 2023 OECD D4SME Survey.

**Lack of knowledge about digital tools and how to start the digital transformation represent the main barrier (43%) for businesses that have not digitalised.** When asked to rate their level of digital maturity, close to 11% of surveyed businesses indicated they were not digitalised (see Figure 11). It must be noted, however, that even these businesses have at least a basic level of digital literacy as evidenced by their participation in the online survey. Among these, 43% indicate they are not using digital tools for their core activities because they do not know where to start with digitalisation and 40% because they do not know enough about digital tools (Figure 12)<sup>6</sup>. The cost of digitalisation is also advanced as a reason for non-use of digital tools by 1 in 4 businesses and about the same share (24%) indicate they do not see the benefits of using digital tools, highlighting the persisting need to raise awareness about the advantages of digitalisation. An additional 16% indicate they are concerned about privacy and hacking and 12% that they have difficulties understanding digital regulations (e.g., data protection laws).

**Figure 12. Barriers to digital tool adoption by businesses considering they are “Not digitalised”**

As a percentage of the total number of responses



Note: Based on respondents that indicated their business was not digitalised. Respondents were given the possibility to select multiple answers.  
Source: 2023 OECD D4SME Survey.

### ***Digitalisation objectives and persisting barriers***

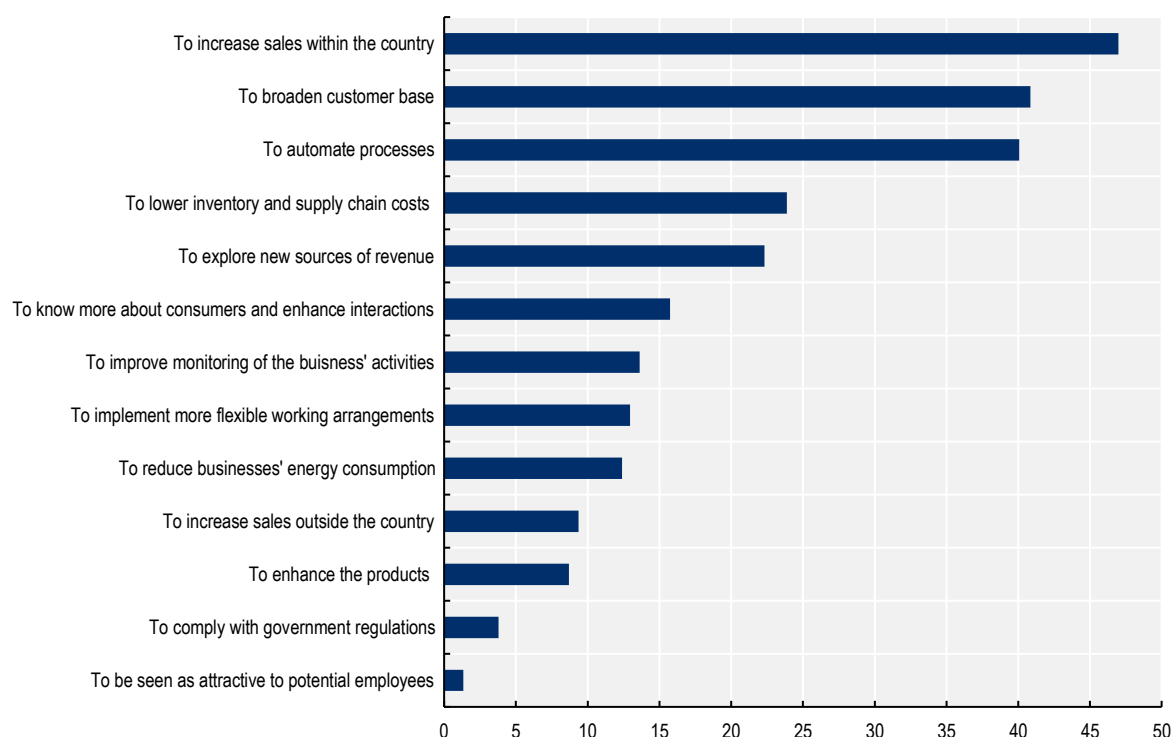
**Increasing sales domestic sales, improving customer reach and automating processes are the main drivers of SME digital adoption, with some interesting differences across sectors and perceived levels of digital maturity.** Respectively 47% and 41% of respondents indicate that increasing sales within the country and broadening their customer base were main objectives in taking up digital tools (Figure 13). Considering that a large part of respondents operate in the retail sector, this result is in line with findings in the 2022 D4SME survey among hybrid and online retailers, who also indicated increasing sales within the country as a top benefits of online sales (OECD, 2023<sup>[3]</sup>). Increasing domestic sales is also the top-cited objective among SMEs operating in the wholesale retail and manufacturing sectors and broadening the customer base and improving understanding of and interactions with customers appear as the top two selected objectives by businesses in the food and beverage sector. Overall, automating processes is the third most selected objective with 40% of respondent businesses indicating this was a main motivation in the take up of digital tools. In fact, this is the most selected objective by businesses operating in the professional services sector. Mostly digitalised businesses are also more likely to select this as a main driver, with 48% indicating this is the case against 33% of somewhat digitalised businesses<sup>7</sup>.

**Lowering costs as well as exploring new revenue sources are also key incentives driving the take up of digital tools, but differences can be observed depending on businesses' way of interacting with customers.** Overall, respectively 24% and 22% of respondent businesses indicate that lowering inventory and supply chain costs or exploring new revenue streams were main objectives in digitalising. While 26% of hybrid businesses indicate exploring new revenue streams as a key digitalisation objective, this was the case of only 18% of online businesses and 15% of SMEs operating exclusively in-person<sup>8</sup>. However, hybrid SMEs were comparatively less likely to indicate reduced costs as an objective, with 29% of online businesses and 25% of in-person businesses selecting this as a key objective against 19% of hybrid businesses. These findings are once more in line with results from the D4SME hybrid retail survey, which found that hybrid businesses were comparatively less likely to agree that operating online enabled them to bring down operational costs compared to online businesses (OECD, 2023<sup>[3]</sup>).



**Figure 13. Businesses' objectives for digitalisation**

As a percentage of responses

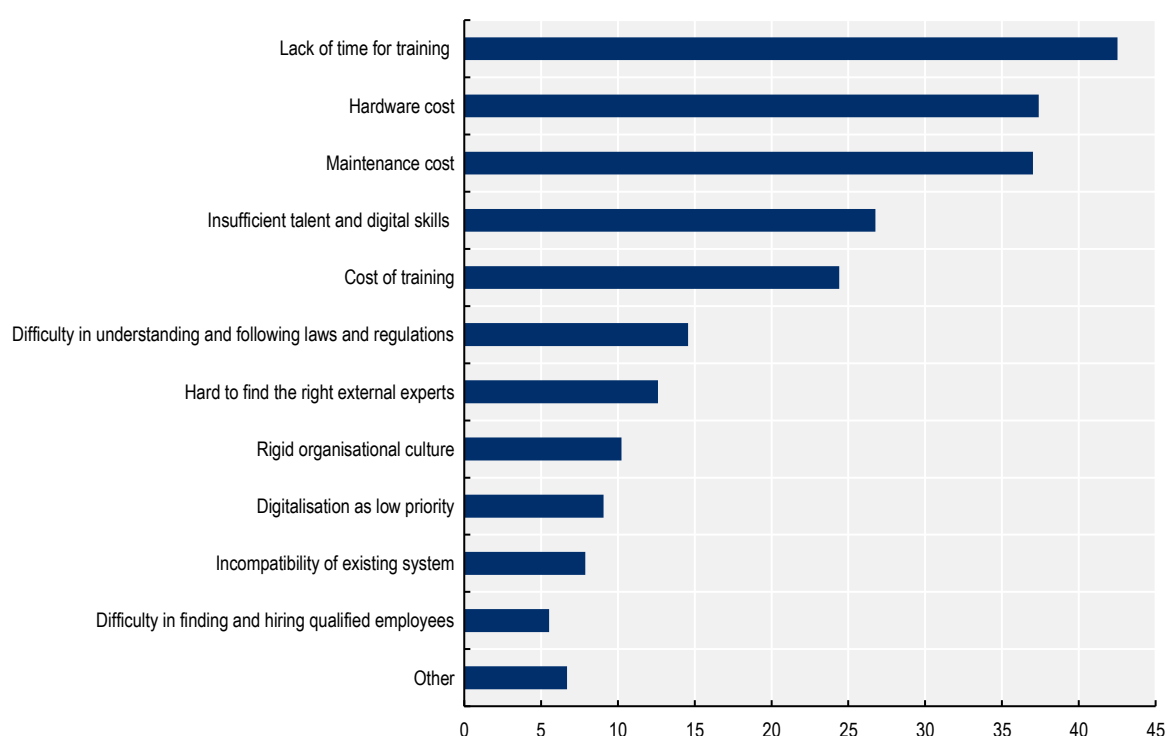


Note : Based on respondents that indicated their business is digitalised. Respondents were given the possibility to select multiple answers.  
Source: 2023 OECD D4SME Survey.

**Lack of digital skills, along with hardware and maintenance costs are identified as key motives of dissatisfaction with the digitalisation process.** While most respondent businesses indicate they are satisfied with their level of digitalisation (see Figure 11), this is not the case for a significant 28% of respondents. Businesses that express dissatisfaction with their use of digital tools indicate lack of time for training as main cause (43%). Skills and cost related barriers emerge as top concerns among respondent businesses with 37% indicating hardware and maintenance costs as reasons for dissatisfaction and 27% reporting lack of talent and skills as a main reason for discontent (Figure 14). Further, 24% of respondent businesses indicating cost of training as a factor impeding satisfaction with level of digital adoption. Results are in line with existing literature suggesting that SMEs often lack the resources to fully leverage digital tools, including financial resources but also human capital and time (OECD, 2021<sup>[8]</sup>). Another key obstacle highlighted by respondents is understanding and abiding by digital laws and regulations. This is in line with findings from the hybrid retail D4SME survey, where respondent businesses indicated that complex e-commerce regulations were a key barrier to digitalisation (OECD, 2023<sup>[31]</sup>).

**Figure 14. Reasons for not being satisfied with their level of digitalisation**

As a percentage of responses



Note: Based on respondents indicated their unsatisfactory digitalisation. Respondents were given the possibility to select multiple answers.  
Source: 2023 OECD D4SME Survey.

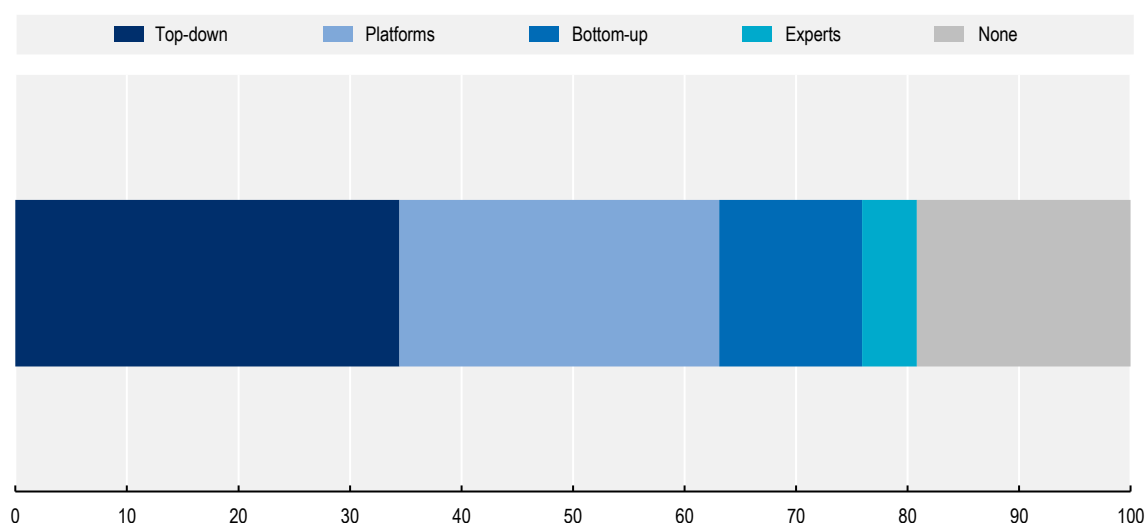
### ***Digitalisation on the ground: processes and practices***

After getting an understanding of the objectives driving the take up of digital tools by respondent SMEs or the obstacles impeding them from fully leveraging them, this section explores the practical aspects of SME digitalisation. It examines their operational practices, ranging from the implementation of cybersecurity measures to their decision-making processes and use of digital tools when interacting with customers, shedding light on how digitalisation efforts unfold on the ground.

**Most respondent businesses adopt a top-down approach when digitalising with a significant segment, predominantly composed by self-entrepreneurs, relying on online platforms.** When asked about decision making processes pertaining to digitalisation, 19% of respondent businesses indicate they do not have a clear process in place (Figure 15). Otherwise, over one third of respondents (34%) employ a top-down approach to digitalise, 29% mainly rely on online platforms, 13% employ a bottom-up approach, with employers encouraged to take initiatives, and 5% resort to external experts. There is strong variation in the use of online platforms to structure digital efforts across business sizes, with 9% of medium-sized businesses indicating this method against 32% of self-entrepreneurs.

**Figure 15. Businesses' preferred method for implementing digitalisation**

As an average percentage of responses from the surveyed geographies



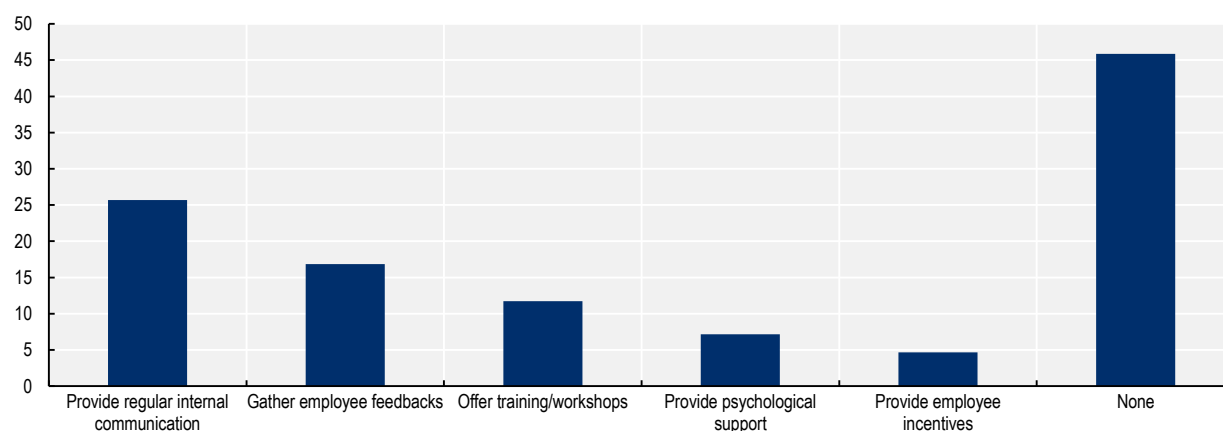
Note: Based on respondents that indicated their business is digitalised. Surveyed geographies include Europe-4 (Germany, France, Italy, Spain), Japan, Korea, and the United States.

Source: 2023 OECD D4SME Survey.

**Close to half of respondents (46%) indicate that they do not have any programme in place to help employees adapt to digitalisation changes, highlighting a significant area for enhancement.** Digitalisation can have a transformative impact on business organisational processes and operations (OECD, 2021<sup>[8]</sup>), however, ensuring that all employees are on board and able to effectively leverage these tools in their daily activities is key to ensure success (Henretta and Chopra-McGown, 2017<sup>[29]</sup>). When asked about how they assist employees in coping with changes related to the implementation of digitalisation in the businesses, over one in four businesses (26%) indicate that their main strategy consists in communicating changes internally and 17% in collecting feedback from employees (Figure 16). Only 12% of respondent businesses offer specialised trainings or workshops, and 7% provide psychological support. These findings emphasise the importance of a holistic approach to supporting employees during digitalisation initiatives. It is crucial to ensure that the workforce is not only informed but also adequately equipped and mentally prepared for the upcoming changes, as elaborated in Mental well-being section.

**Figure 16. Types of assistance provided to help employees adapt to digitalisation changes**

As a percentage of responses



Note: Based on respondents that indicated their business is digitalised. Respondents were given the possibility to select multiple answers.  
Source: 2023 OECD D4SME Survey.

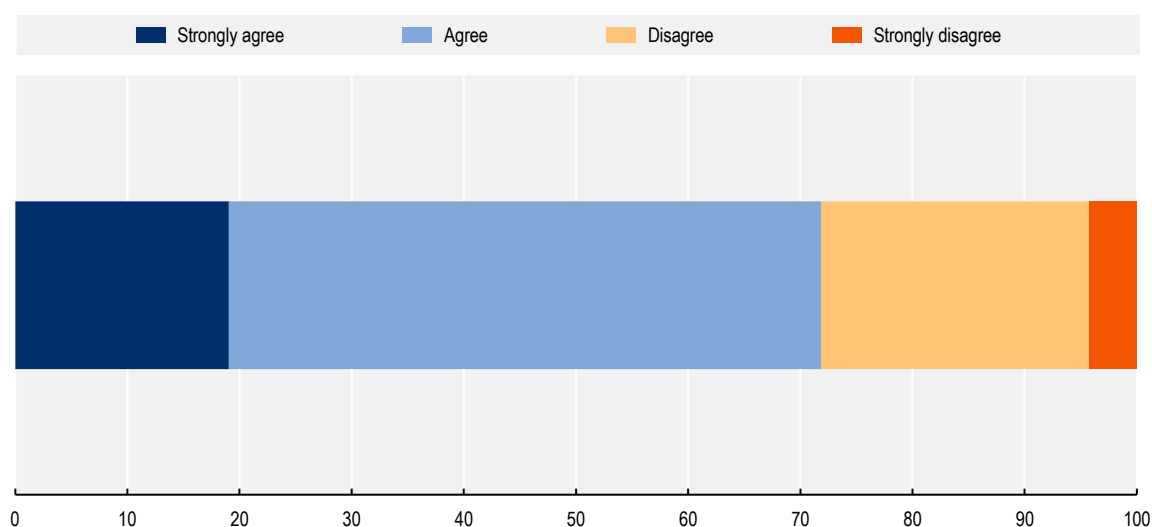
### *Practices: leveraging digital resources*

**Overall, 72% of respondent businesses use data to support their decision-making process, underscoring the pivotal role of data-driven insights in modern business strategies, with larger businesses doing it more.** When asked whether "they used data as part of their decision-making process", 53% of respondent businesses express their agreement with this statement, with an additional 19% expressing strong agreement (Figure 17). These results reflect a widespread use of data-driven insights by survey respondents. We also observe variations in responses across levels of self-reported digital maturity and satisfaction, with 77% of businesses reporting they have digitalised most of their core activities indicating the use of data in their decision-making process against 63% of somewhat digitalised businesses<sup>9</sup>. Moreover, data indicates that size seems to be positively correlated with the use of data for decision making, as this is done by 64% of self-entrepreneurs, 70% of micro businesses, and 76% of small and medium businesses. Businesses operating in different sectors do not show significantly different levels of use, with businesses in food & beverage, retail, manufacturing, wholesale and professional services all close to the average of ~70%.

**Overall, businesses that make decisions supported by data tend to be more satisfied with the results of their digitalisation efforts, particularly in the manufacturing sector.** Results show that 74% of businesses making decisions informed by data are satisfied with the results of digitalisation against 67% of businesses that do not use data in their decision-making process. Across sectors, we find that the gap is wider among manufacturing businesses, with 76% of manufacturing businesses using data to support their decisions indicating satisfaction with their digitalisation efforts against 62% in the case of businesses not using data. Manufacturing businesses are the most likely to report dissatisfaction with results from digitalisation as previously highlighted, but these results hint at an enabling role of data-driven insights in raising satisfaction with results of digitalisation.

**Figure 17. Businesses using data for decision making**

As an average percentage of responses from the surveyed geographies



Note: Based on respondents that indicated their business is digitalised. Surveyed geographies include Europe-4 (Germany, France, Italy, Spain), Japan, Korea, and the United States.

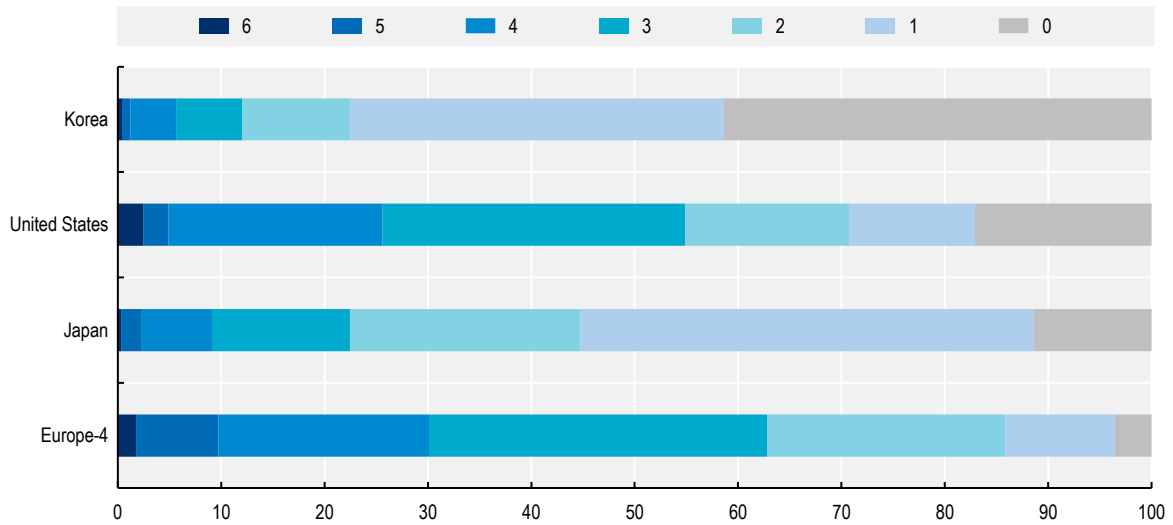
Source: 2023 OECD D4SME Survey.

**Overall, 82% of respondents have at least one cybersecurity measure in place with 56% of respondents reporting they have more than one measure in place.** Across all geographies, 18% of respondent businesses report they do not implement any cybersecurity measures, however, striking differences can be observed across geographies (Figure 18), with 41% Korean respondent businesses indicating they do not have any cybersecurity measures in place, against 17% in the US, 11% in Japan and 4% in the EU. Otherwise, 66% of Japanese and 46% of Korean respondent businesses report they have a maximum of two cybersecurity measures in place. On the other hand, Europe-4 and US businesses are more likely to report implementation of more than two measures, with over 60% of businesses across Europe-4 countries and 54% of US respondent businesses reporting they have more than three cybersecurity measures in place.

**The most common cybersecurity measures are the use of anti-virus or anti-malware software, followed by the adoption of two-factor authentication.** 67% of respondent businesses indicate they use anti-virus software, 48% that they implement two-factor authentication and 45% strong and secure passwords (Figure 19). Additionally, one third of respondents integrate VPNs or firewalls into their cybersecurity strategies. On the other hand, only 11% of respondent businesses engage in cybersecurity trainings and 6% perform regular cybersecurity assessment. While 84% of respondent businesses indicate they had not experienced a cyber-attack, differences can be observed across geographies (Figure 20) While close to 1 in 3 (31%) respondent businesses in Europe-4 and 23% of Korean respondent businesses report their businesses had been targeted by cyber-attacks, this is only the case for respectively 7% and 6% of US and Japanese respondent businesses. Given the dynamic nature of cyber threats, it is crucial for businesses to continually assess and enhance their preparedness against external attacks, highlighting a need for further take up of cybersecurity practices.

**Figure 18. Number of cybersecurity measures implemented by businesses**

As a percentage of responses in each geography

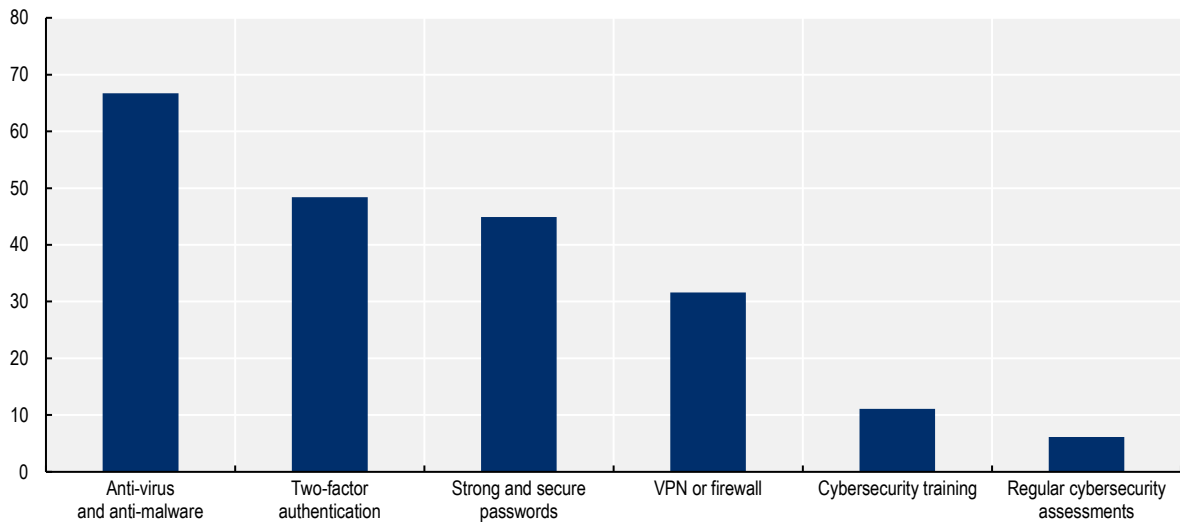


Note: Europe-4 includes Germany, France, Italy, and Spain.

Source: 2023 OECD D4SME Survey.

**Figure 19. Types of cybersecurity measures implemented by businesses**

As a percentage of responses

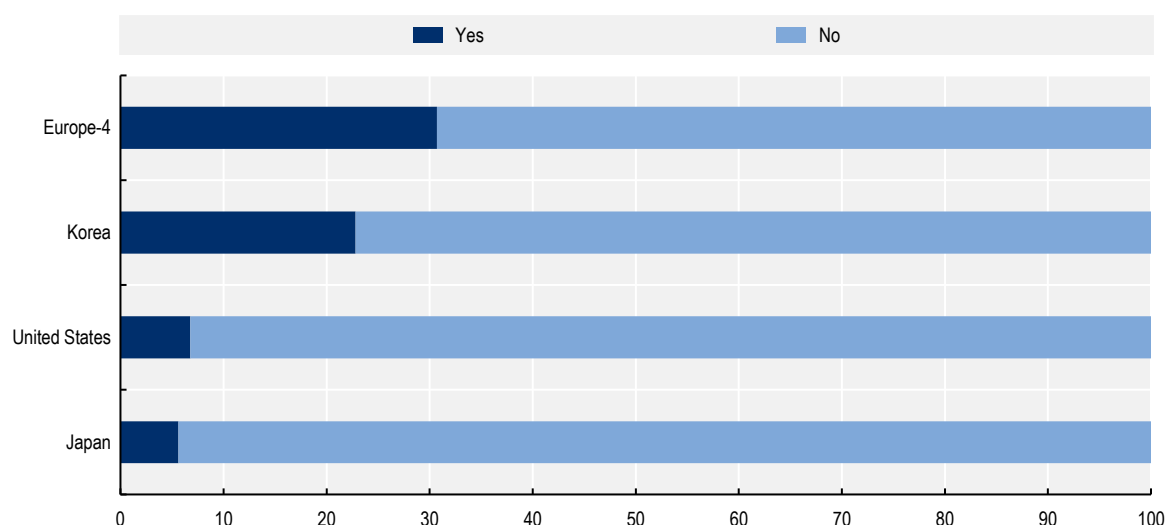


Note: Based on respondents indicated that their business implements at least one cybersecurity measures. Respondents were given the possibility to select multiple answers.

Source: 2023 OECD D4SME Survey.

**Figure 20. Businesses having experienced cyberbreach**

As a percentage of responses in each geography



Note: Europe-4 includes Germany, France, Italy, and Spain.

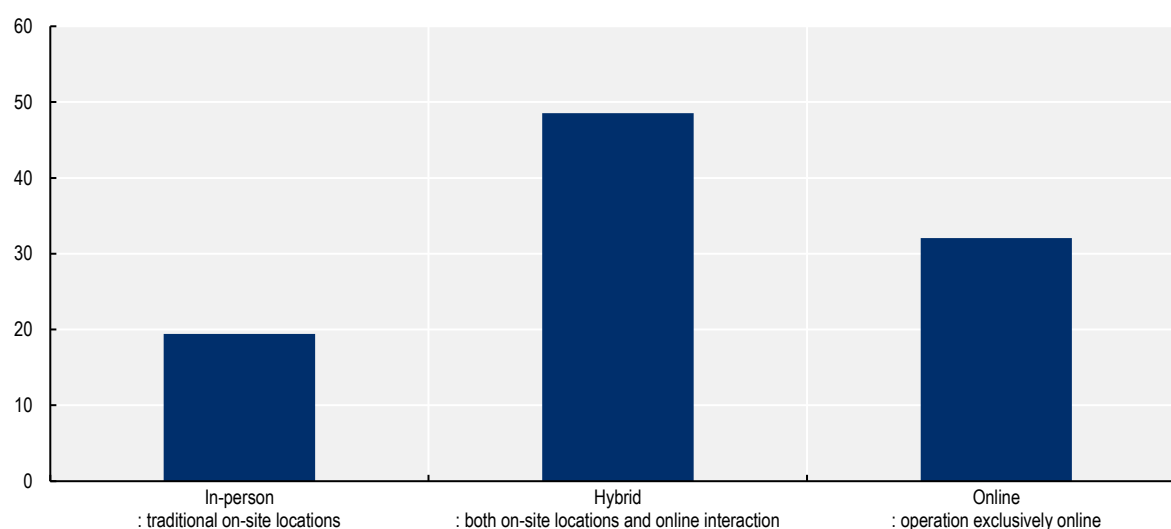
Source: 2023 OECD D4SME Survey.

**Approximately half of the surveyed businesses adopt a hybrid approach to customer interaction, seamlessly integrating both on-site and online activities.** This dual-channel strategy is illustrated in Figure 21, where it is shown that nearly half (49%) of respondents maintain physical locations while also engaging with their customers online. In contrast, a smaller segment, 19% of businesses, opt for a more traditional model, interacting with customers mainly in-person. Finally, a significant 32% have embraced a digital-first approach, operating and interacting with their customers exclusively through online channels.

**There are notable differences by sector in relation to the type of online activity.** Over 60% of businesses in wholesale trade, manufacturing and the professional service sectors indicate implementation of hybrid practices contrary to only 39% of respondent businesses in the retail sector. On the other hand, 52% of retailers indicate they operate exclusively online while this is only the case for 24% of businesses in manufacturing, 17% in wholesale trade and 14% in the professional services sector. Finally, businesses in the food and beverage sector show predominant reliance on traditional in-person interaction, with 52% indicating they exclusively interact on-site with their customers. This shows possible untapped potential, where adoption of digital tools, including delivery service applications, can allow these businesses to broaden their reach and become more resilient against disruptions, as evidenced during the COVID-19 pandemic (OECD, 2023<sup>[3]</sup>).

**Figure 21. Online and offline presence of respondent businesses**

As a percentage of total number of responses



Source: 2023 OECD D4SME Survey.

### *Practices: addressing digital skills needs*

**Close to 1 in 2 respondent businesses (46%) attend to their digital skills needs internally, by reassigning staff or utilising their personal network of family and friends, while 42% address them externally, contracting experts or making new hires.** Overall, only 12% of surveyed businesses indicate they do not have digital skills needs, underscoring widespread recognition of the importance of digital literacy among respondent businesses (Figure 22). Otherwise, majority of businesses attend to their digital skills needs internally, with 24% reporting they reassign staff to attend to their digital skills needs and 22% that they turn to their personal network for this purpose. Finally, 36% of respondents report they contract external experts to attend to their digital skills needs and 6% that they make new hires.

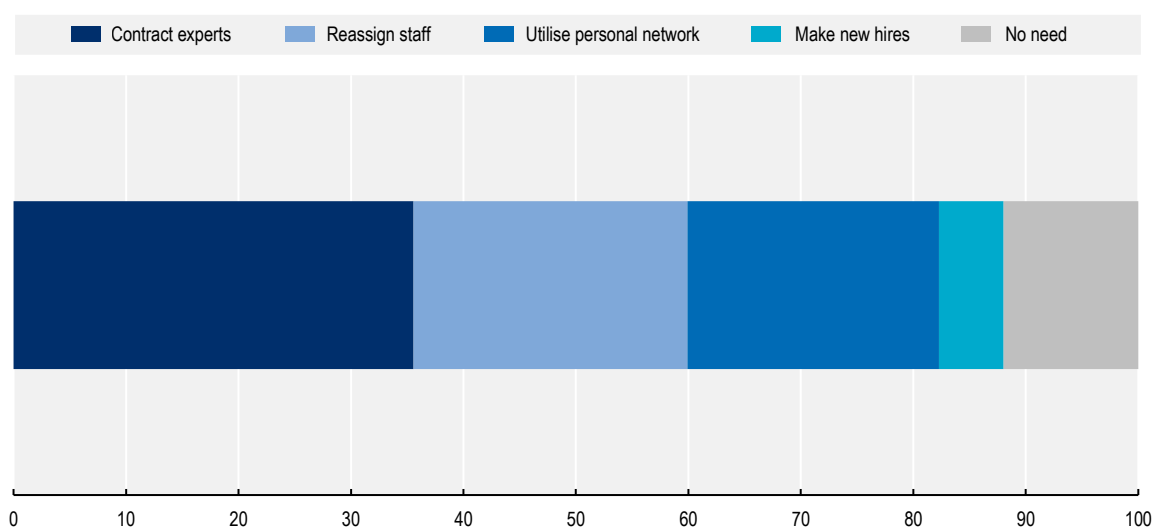
Across sectors, we find that self-entrepreneurs and micro-businesses tend to be more likely to resort to their personal network of family and friends, with respectively 31% and 22% of surveyed businesses confirming this against 3% of small businesses and none of the surveyed medium-sized businesses. Small and medium-sized businesses on the other hand tend to reassign staff to address their digital skills with respectively 46% and 44% of respondents opting for this strategy. Finally, medium-sized businesses were the most likely to handle their digital skills needs externally with 40% indicating they contract external experts and 12% hiring new employees.

**Businesses addressing their digital skills by appealing to external sources, mainly refer to other business owners and digital agencies for recommendations.** Close to 18% of businesses indicate they either contracted external experts or made new hires referred to fellow business owners and 15% to digitalisation agencies (Figure 23). Only 1% of respondents indicate they source experts from local universities or innovation centres or to government sources to address their digital expertise needs. These results highlight the relevance of business networks, pointing to the existence of common experiences and challenges. The high share of SMEs reporting reliance on digital agencies further suggests a recognised value of the services provided by specialised digital institutions.



**Figure 22. How businesses acquire digital skills**

As an average percentage of responses from the surveyed geographies

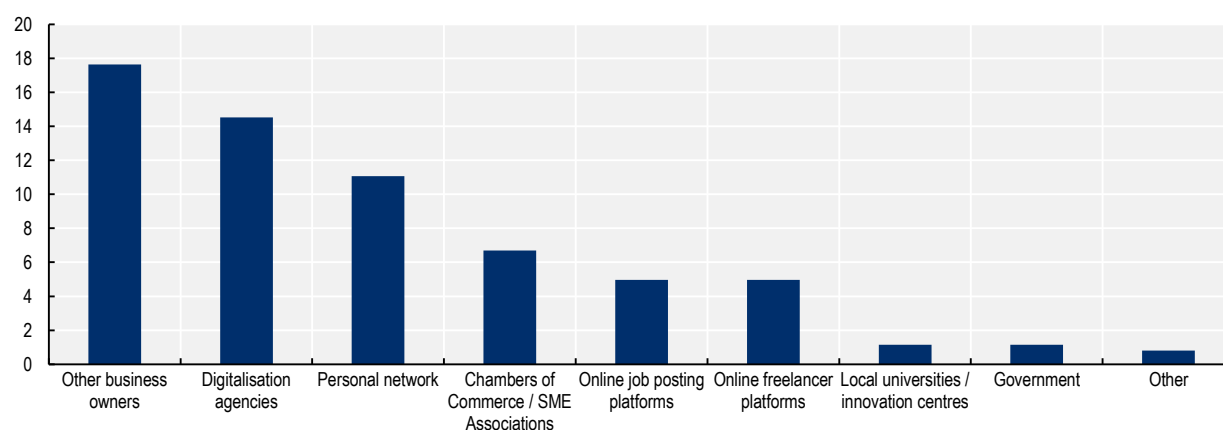


Note: Surveyed geographies include Europe-4 (Germany, France, Italy, Spain), Japan, Korea, and the United States.

Source: 2023 OECD D4SME Survey.

**Figure 23. Businesses' preferred sources in finding external digital expertise**

As a percentage of responses



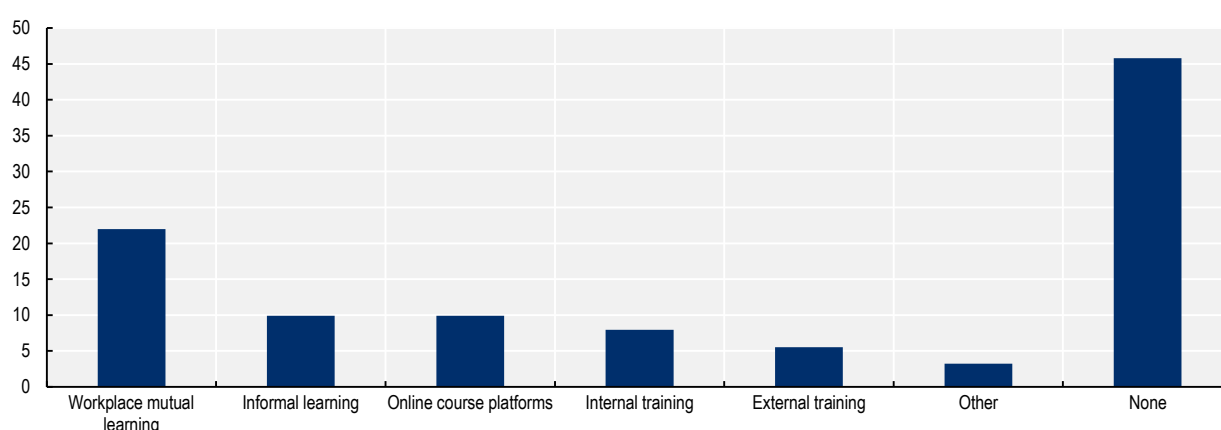
Note: Based on respondents that indicated their businesses source their digital skills outside to the workplace, whether contracting digital experts or making new hires. Respondents were given the possibility to select multiple answers.

Source: 2023 OECD D4SME Survey.

While 54% of respondent businesses report they have some type of programme for the development of digital skills in the workplace, most refer to workplace mutual learning. 46% of surveyed businesses indicate that their business does not provide any digital skills' programme within the workplace (Figure 24). The most widespread form of training consists of workplace peer learning (22%), followed by informal learning and, to a similar extent, online courses by platforms (10%). Only 8% of respondents reported their business provided internal trainings for the development of digital skills and 6% that employees participated in external trainings for this purpose. These results are in line with findings from the D4SME hybrid retail survey, where training programmes by universities or the government were taken up by less than 1 in 10 businesses (OECD, 2023<sup>[3]</sup>). The low share of respondents reporting they engage in formal digital skills training activities may be related to the barriers that SMEs usually experience in accessing relevant trainings, ranging from a lack of awareness about available supports or skill needs, time-related or financial barriers (OECD, 2021<sup>[8]</sup>). In fact, businesses that indicate dissatisfaction with their level of digital maturity due to lack of time for training (see Figure 14) were more likely to indicate their business did not engage in any training activity, with 47% indicating this was the case against 39% of those who did not consider lack of time for training as an issue.

**Figure 24. Types of skills programmes implemented to foster digital skills within workplace**

As a percentage of respondents



Note: Based on respondents that indicated their business is digitalised. Excluding "I don't know" answers. Informal learning includes self-learning and using generative AI. Respondents were given the possibility to select multiple answers.

Source: 2023 OECD D4SME Survey.

## Special dimensions of the digital transformation

### Generative Artificial Intelligence

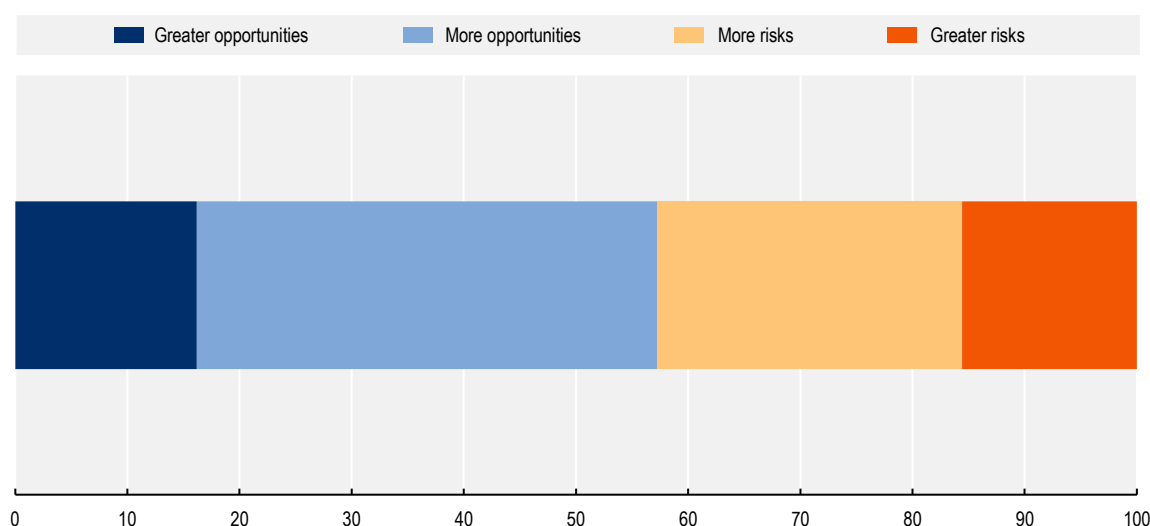
The last wave of development of Artificial Intelligence called “generative AI” might have a particularly important impact on SMEs’ processes and products. LLMs became available to the public at the end of 2022, and since then the growth in the number of users and applications has been fast. ChatGPT, the most renown LLM created and managed by OpenAI, reached 100 million users in around 2 months, becoming the fastest growing internet application in history (e.g., it took TikTok 9 months in 2016, and Google almost 1 year in 1999 to reach 100 million users (Reuters, 2023<sup>[30]</sup>). Since 2020, LLMs have evolved rapidly, and multiple applications have spurred: for example to create art, images, video, music (e.g., *Dall-E*, *MidJourney*, *Stable Diffusion*), but also to assist developers in writing code. In general, given the potential to improve productivity in almost any cognitive task, several researchers are starting to look

at it as a General Purpose Technology (GPT, (Bresnahan and Trajtenberg, 1995<sup>[31]</sup>)), akin to electricity, or the internet (Jovanovic and Rousseau, 2005<sup>[32]</sup>). Differently from these previous “waves”, which required large investments in complementary infrastructure, Generative AI is delivered “to the door” of businesses, including entrepreneurs, workers, and managers in SMEs, through cloud-based software and applications that are readily accessible at almost no cost. Only very basic knowledge of the tool is required, as the interaction is mostly through “natural language” queries (i.e., human dialogue), and thus easily accessible to anyone. The impact of such a tool, which for the first time allows to outsource cognitive tasks to a machine, might be revolutionary for business practices (McAfee, Rock and Brynjolfsson, 2023<sup>[25]</sup>).

**Most respondent SMEs have a positive view of the impact that tools with “generative AI” capabilities can bring to their business operations, but only a minority actually use them.** 57% of respondent businesses consider that the benefits of using digital tools integrating generative AI functionalities outweigh the associated risks, with about 1 in 6 businesses considering that there are in fact only opportunities and no associated risks (Figure 25). An additional 27% of respondents recognises the opportunities associated with using this type of tools despite considering risks are greater with only 16% of businesses indicating they consider the benefits to be null. It is interesting to note that respondents in managerial positions tend to have a more positive perception of generative AI than employees, with 62% indicating their belief that the benefits associated with this technology outweigh the risks against 48% of employees. Individuals in managerial positions may tend to have a broader perspective on the strategic advantages of generative AI, viewing it as a valuable asset to innovate and stay competitive. In contrast, employees might focus more on the immediate impacts of AI, such as job displacement or changes in work processes, leading to a more cautious stance towards the technology. Box 3 provides a more detailed analysis of text responses regarding perceived advantages and risks of generative AI.

**Figure 25. Respondents’ opinion on the impact of generative AI on their business**

As an average percentage of responses from the surveyed geographies



Note: Surveyed geographies include Europe-4 (Germany, France, Italy, Spain), Japan, Korea, and the United States.

Source: 2023 OECD D4SME Survey.

### Box 3. Survey respondents' perceptions of Generative AI

Respondents were given an opportunity to expand on the reasons why they considered generative AI to yield more risks or opportunities. The word cloud analysis in Figure 26 reveals a mixed sentiment among businesses regarding generative AI.

The frequency of terms like "opportunity," "great," and "improve" suggests that many businesses see the potential for generative AI to bring about positive changes and opportunities for growth. The words "time," "think," "understand" and "customer" hint at the multiple applications of these technologies for several respondent businesses, viewing it as a tool to enhance productivity, innovation, and customer engagement. A number of respondent businesses highlight how, by automating content creation tasks and generating ideas, AI can significantly enhance operational efficiency. Additionally, generative AI is seen as a valuable tool for opening new avenues of reflection and innovation, particularly in product development and marketing strategies. Many respondents acknowledged that generative AI tools can provide fresh perspectives and ideas that humans might not have considered, contributing to creative and innovative outcomes. Furthermore, generative AI is often viewed as a complement to human expertise, enhancing skills and capabilities rather than replacing them entirely.

However, there are also indications of caution and concern, as seen in words like “risk” and “worried”. One major concern is the risk of misinformation and inaccuracies in the content generated by AI systems, especially in regulated industries like finance, where incorrect data can have severe consequences. Moreover, concerns are expressed about the loss of control over decision-making processes and the potential for AI to perpetuate cognitive biases. Additionally, respondents highlighted the challenges of ensuring data privacy and security when using AI systems, particularly in handling sensitive information.

Overall, while recognising the opportunities presented by generative AI, respondents emphasised the importance of cautious and responsible utilisation to mitigate potential risks. In fact, a number of respondent businesses highlight the need for governments to regulate generative AI technologies and how the uncertainty regarding future regulations act as a disincentive to develop the use of these resources within their business.

**Figure 26. Word frequency analysis of respondents' perception on the impact of generative AI**



Note: the figure displays the 1000 most frequently used words by respondents.

Source: 2023 OECD D4SME Survey.

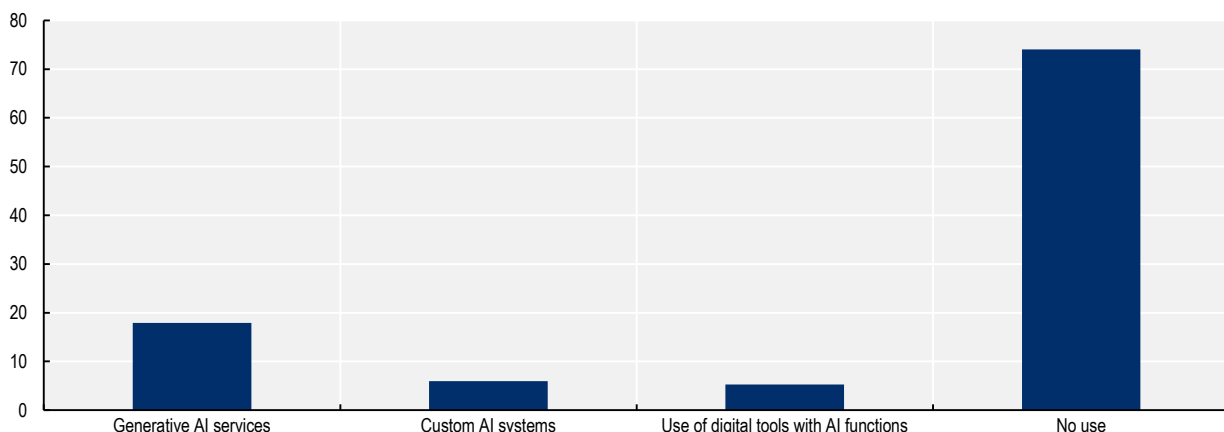
**Despite the perceived opportunities, only few respondent SMEs acknowledge their use of AI, even if by construction, all respondents in the sample are using it, at least “passively”.** Overall, just above 1 out of 4 SMEs (26%) indicate that they are aware of their use of AI in core businesses products or processes (Figure 27). However, by construction, the sample only includes SMEs active on large digital platforms (e.g., Amazon, Intuit, Kakao, Rakuten), which means that 100% of them are actually at least indirectly using AI through the “machine learning” algorithms embedded in the services offered by these platforms. In other words, only a small share of respondent businesses acknowledges or is aware of this “passive” use, with 1 in 20 respondents recognising they use digital tools with AI functions (Figure 27).

**There is a rapid uptake of “Generative AI” services, with close to 1 in 5 (18%) of surveyed businesses reporting use (69% of reported AI use in the sample) less than a year after the services became publicly available.** Generative AI is the most widespread application of this technology among respondent business, which seems to confirm the easier accessibility hinted at in the above-mentioned literature (OECD, 2021<sup>[8]</sup>). This is a very significant shift that happened by the end of 2022 and beginning of 2023, as “generative AI” applications became available to global users. If we had considered only businesses creating/acquiring tailored machine learning algorithms (produced by either internal or external experts) to be applied in their business functions, the share of “active” users would have been much lower: only 6% of SMEs in the whole sample or 23% of reported applications.

**When analysing use of AI across levels of maturity, we find that more digitally matured businesses are more inclined to integrate AI in their operations.** Specifically, 35% of mostly digitalised respondent businesses<sup>10</sup> indicate they use an application of AI technologies compared to 26% across the entire sample. Among mostly digitalised businesses, 23% of use generative AI services, 8% make a passive use of AI and 7% use custom AI systems. Conversely, 80% of businesses perceiving themselves as only “somewhat” digitalised state they do not use any AI technologies with only 13% using generative AI, 5% employing custom AI systems and 3% using AI passively through other digital tools<sup>11</sup>. While these results are based on firm’s own perception of their level of digital maturity, they still point to the existence of a rather wide gap in the adoption of new digital technologies among SMEs at different levels of digital advancement.

**Figure 27. Types of AI used by businesses**

As a percentage of respondents



Note: Based on respondents that indicated their business is digitalised. Respondents were given the possibility to select multiple answers.  
Source: 2023 OECD D4SME Survey.

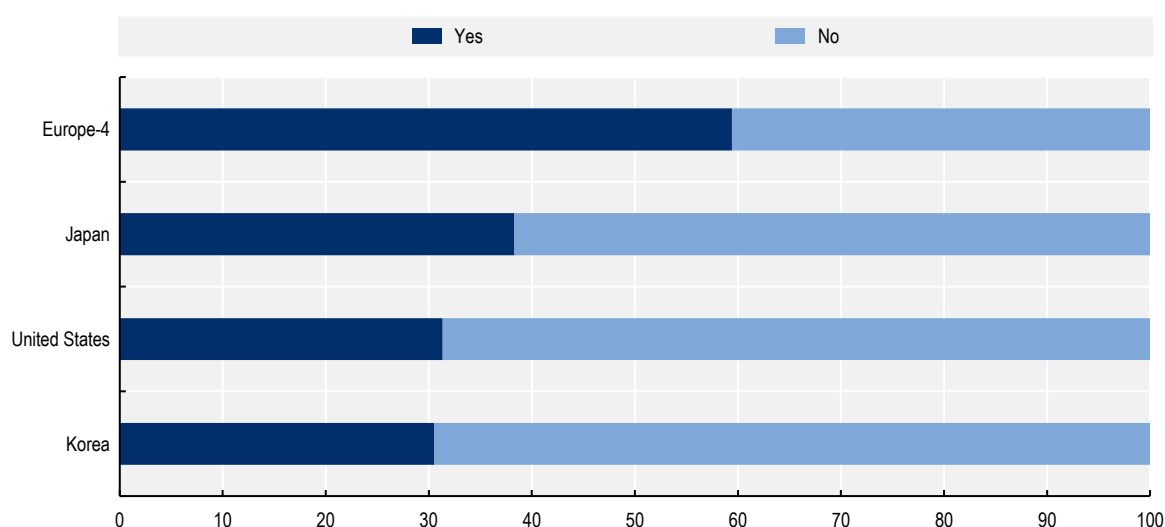
## Twin transition

**In Europe-4 most businesses (59%) have some form of environmental performance monitoring while the percentage is lower in other geographies.** Respondents from Europe-4 countries are particularly proactive in tracking their environmental performance (e.g., energy consumption, energy efficiency, carbon footprint). The revision of the *Energy Efficiency Directive* (Directive 2012/27/EU), effective since October 2023, should further incentivise SMEs to track their environmental performance and energy use as the directive broadens the requirements for energy audits to encompass all companies – including SMEs – surpassing specific energy consumption threshold (European Commission, 2023<sup>[33]</sup>). Across other geographies however, this practice is not as widespread, with 38% of Japanese businesses and 31% of US and Korean businesses indicating they track their environmental performance (Figure 28).

**Several technologies enable businesses to track and optimise their energy use, however, survey results highlight a gap between intentions and practices.** Technologies enabling businesses to optimise the use of resources and pursue more sustainable practices are becoming increasingly available. This is the case of applications such as energy monitoring systems or smart meters, facilitating the gathering of data on energy consumption and automated resource optimisation (OECD, 2023<sup>[12]</sup>). Interestingly however, less than half (47%) of the businesses that selected reducing energy consumption as a key objective in digitalising (see Figure 13) report they monitor their business' environmental impact. This discrepancy underscores a gap between intentions and practices among respondent SMEs that may be due to insufficient resources or lack of awareness of monitoring digital tools.

**Figure 28. Businesses monitoring their environment impact**

As a percentage of responses in each geography



Note: Europe-4 includes Germany, France, Italy, and Spain.

Source: 2023 OECD D4SME Survey.

## Mental well-being

**Across OECD countries, there is increasing attention on the impact of external shocks on the mental well-being of entrepreneurs, SME managers and workers.** Throughout the recent crises, anxiety and depression rates have increased, with entrepreneurs facing additional pressure. Looking for example at the effects of the COVID-19 pandemic, surveys show that 66% of Australian small business

owners deemed that their mental well-being was negatively impacted, while 83% of SMEs in the UK reported suffering from anxiety due to the pandemic (Cinar and Bilodeau, 2022<sup>[34]</sup>; OECD, 2023<sup>[1]</sup>). OECD governments are committed to fostering awareness and prompt actions towards improving the well-being and mental health of entrepreneurs, SME managers and workers as delineated in the “*Declaration on Enhancing SMEs and Entrepreneurship Policies for Greater Resilience and Successful Green and Digital Transitions*” adopted on 28 June 2023 (OECD, 2023<sup>[2]</sup>). Box 4 further underlines the importance of promoting well-being in the workplace and presents the types of policy levers implemented by governments in OECD countries.

#### Box 4. Government policies to promote health and well-being in the workplace

Employers incorporating workplace health and well-being initiatives not only mitigate occupational risks but also cut down on healthcare expenses, lower absenteeism due to illness, and boost overall work productivity. In addition, employees typically experience positive outcomes from workplace programs, as there is evidence indicating that such initiatives enhance lifestyles and health in both the short and medium term. Governments can use a number of policy levers to support employers in fostering health and well-being in the workplace.

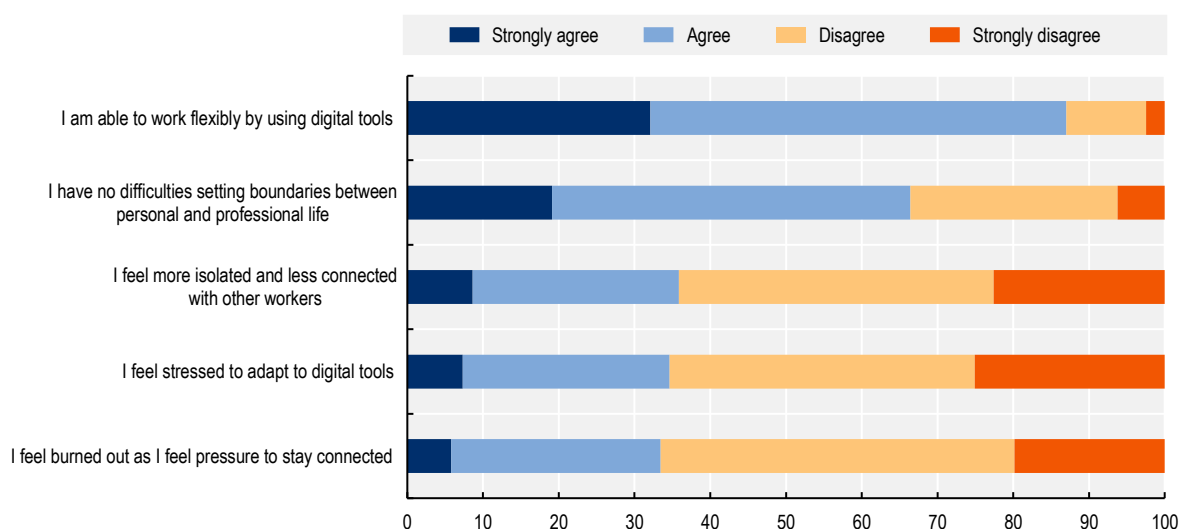
- **Workplace regulations** establish baseline standards for preventing risks and overseeing health, safety, and well-being in the workplace.
- **Financial incentives**, such as reduced insurance premiums, tax credits, and subsidies, are crucial tools for governments to motivate and assist employers, especially SMEs. These incentives serve as effective mechanisms to encourage employers to surpass basic accident prevention and safety measures and actively promote health and well-being in the workplace.
- **Disseminating information and guidance** developed together with various stakeholders, including charities, trade unions, and employer associations, can facilitate the promotion of health and well-being in the workplace. This approach enhances awareness, particularly for stigmatised health issues like mental health and improves understanding among employers and managers regarding effective measures.
- **Certification and award schemes** offer employers reputational benefits by attesting that they meet specific standards related to the promotion of health and well-being in the workplace.

Source: Promoting Health and Well-being at Work (OECD, 2022<sup>[35]</sup>).

**The use of digital tools and services enables respondent businesses to work more flexibly, but a significant 34% report feeling burned out by the pressure to stay connected.** 87% of respondent businesses find digital tools beneficial for enhancing workplace flexibility and 66% report that they had no difficulties setting boundaries between their personal and professional lives (Figure 29). However, a significant number of respondents express concerns regarding the negative impact of digital tools on their mental well-being. 36% indicate feeling more isolated as a result of their integration in the workplace and 34% report feeling stressed to adapt to use digital tools or feel burned out by the pressure to stay connected.

**Figure 29. Impact of digitalisation on respondents' mental well-being**

As an average percentage of responses from the surveyed geographies



Note: Surveyed geographies include Europe-4 (Germany, France, Italy, Spain), Japan, Korea, and the United States.

Source: 2023 OECD D4SME Survey.

**Self-entrepreneurs, respondents in managerial positions and women are more likely to report experiencing the negative effects of digitalisation.** Specifically, across all geographies, 36% of self-entrepreneurs and 30% of respondents in managerial positions (CEOs, managers or owners) report feeling burned out by the pressure to stay connected against 19% of employees. Women are also more likely to report experiencing burn out as a result of the introduction of digital tools in the workplace at 34% against 28% in the case of male respondents<sup>12</sup>. The use of digital tools and services has the potential to enhance workplace wellbeing through increased flexibility as largely recognised by respondents, but also through improvements in transparency, and communication amongst others. However, recognising and addressing potential pitfalls in their implementation is equally important to ensure a balanced digital work environment. Box 5 describes recent findings by Lane, Williams and Broecke (2023<sup>[36]</sup>), shedding light on the impact of AI implementation in the workplace, highlighting the positive effect of trainings and internal consultations with employees in the implementation process.

#### Box 5. Recent OECD survey findings on the impact of AI in the workplace

Extensive research examines the potential impact of Artificial Intelligence (AI) on the workforce, however, there has been limited analysis of its actual implementation within organisations and its effects on employees. To address this research gap, the OECD conducted surveys involving 5 334 workers across 2 053 firms in the manufacturing and financial sectors in Austria, Canada, France, Germany, Ireland, the United Kingdom, and the United States. These surveys provide comprehensive insights on the implementation of AI including firsthand experiences and responses to AI-induced changes.

Findings indicate a largely positive perception of AI's impact on worker productivity and working conditions in finance and manufacturing sectors. However, concerns regarding job stability and wages persist among workers. While the adoption of AI technologies has led to task automation and creation,



with a predominant focus on augmenting rather than replacing human tasks, workers express a need for support in navigating these changes successfully.

Employers primarily address changing skill requirements through internal retraining or external services, highlighting the importance of continuous learning. Consultation with workers or their representatives regarding new technologies correlates with better outcomes, underscoring the significance of direct dialogue in fostering a positive working environment. Despite a general trust in employers' decision-making regarding AI, there's a call for more transparency, particularly concerning data privacy and algorithmic decision-making. Finally, the study finds that cost and skill gaps pose greater barriers to AI adoption than government regulation, according to employers.

Source (Lane, Williams and Broecke, 2023<sup>[36]</sup>):

## Government supports for digitalisation

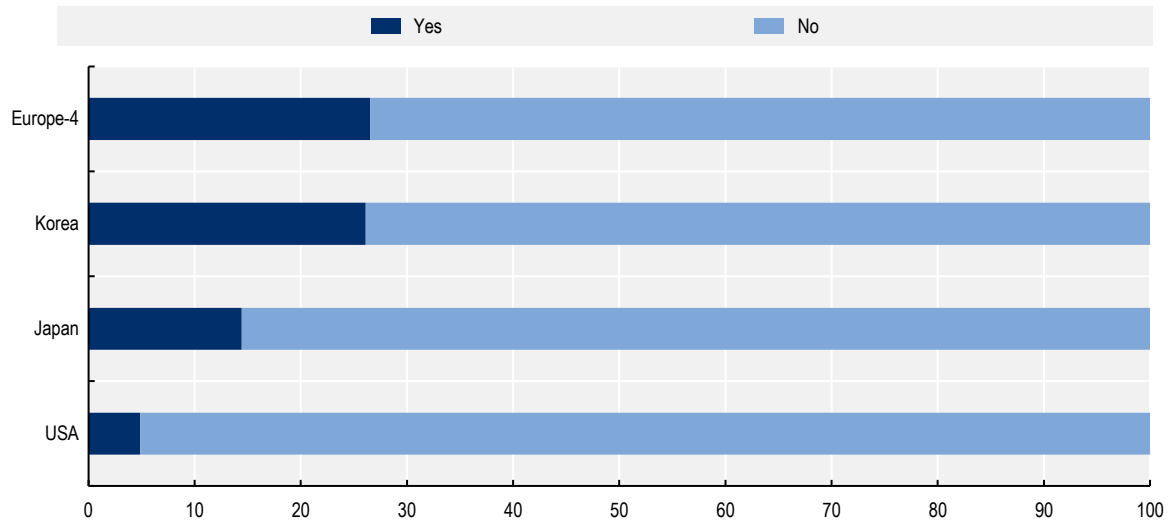
In this section, we analyse respondents' awareness and use of government support programs designed to aid SMEs in their digital transformation. Data on awareness covers all surveyed geographies, however, in the case of take up of government supports for digitalisation, the study focuses on responses by Japanese and Korean businesses due to limited number of responses in other geographies.

### **Awareness**

**There are significant variations in awareness about government supports for digitalisation among sampled businesses.** 18% of respondent businesses report they are knowledgeable of digitalisation supports. Differences can nevertheless be observed across geographies with 27% of respondent businesses from Europe-4 countries reporting they are aware of government programmes for digitalisation in their respective countries. This was also the case for 26% of Korean and 14% of Japanese respondent businesses (Figure 30). In the US, the rate of awareness was the lowest with only 5% of respondent businesses indicating they knew about government supports for digitalisation.

**Figure 30. Businesses aware of government supports for digitalisation**

As a percentage of responses in each geography



Note: Europe-4 includes Germany, France, Italy, and Spain.

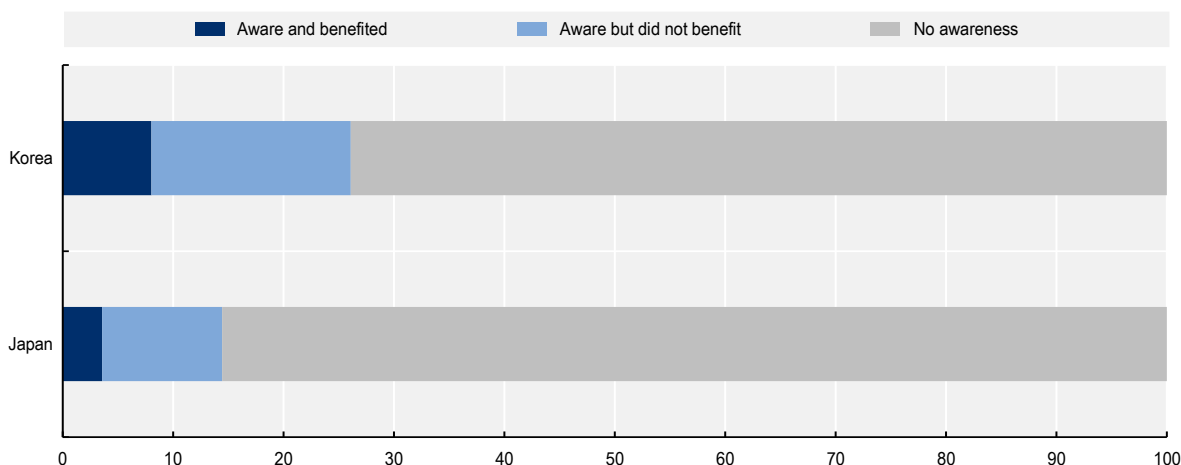
Source: 2023 OECD D4SME Survey.

### ***Uptake: The case of Japan and Korea***

**Uptake of government support programmes for digitalisation is low, with most Korean and Japanese businesses acknowledging their existence indicating they do not leverage them.** Respectively 8% and 4% of Korean and Japanese respondent businesses report having benefitted from supports for digitalisation (Figure 31). Among businesses that were aware of the existence of this type of government supports, this corresponds to about 31% of Korean and 25% of Japanese respondent businesses benefitting from them. These results are in line with findings from the hybrid retail D4SME survey, where only a minority of survey respondents declared benefitting from supports for selling online, with an overall low level of awareness about the existence of relevant supports (OECD, 2023<sup>[3]</sup>). Rather low uptake among businesses knowledgeable about the existence of digitalisation supports could hint at the existence of additional barriers, including burdensome application processes or a lack of understanding of own digital needs (Box 6). Applying to support programmes requires strategic planning and time investments, which can be challenging for SMEs tending to focus on short-term operational pressures (OECD, 2021<sup>[8]</sup>; OECD, 2023<sup>[3]</sup>).

### Figure 31. Awareness and uptake of government supports for digitalisation

As a percentage of responses from each country



Source: 2023 OECD D4SME Survey.

### Box 6. Challenges identified by respondent businesses regarding public support for digitalisation.

Respondents positively perceived financial aids, such as digital vouchers and subsidy offers for digitalisation, highlighting their alignment with business needs and the importance of grants accessible without excessive bureaucratic red tape in the application process. However, respondents also highlighted significant challenges and concerns including limited awareness and access to supports and the sustainability of digital improvements. For a word frequency analysis of text responses, please refer to Figure 32.

**Figure 32. Word frequency analysis of respondents' views on government support for digitalisation**



Note: the figure displays the 1000 most frequently used words by respondents.

Source: 2023 OECD D4SME Survey.

Several responses underscored a lack of awareness regarding existing government supports, with some respondents even indicating they were unaware of their own digital needs. This foundational barrier appeared to be compounded by significant red tape in accessing support programmes, with several businesses referring to burdensome and time-consuming application processes, unclear regulations, or eligibility criteria. To mitigate these challenges, some respondents suggested themselves a strategic focus on enhancing awareness of support initiatives, reducing bureaucratic barriers, and improving the segmentation of supports to offer more tailored, industry-specific solutions to facilitate understanding and participation.

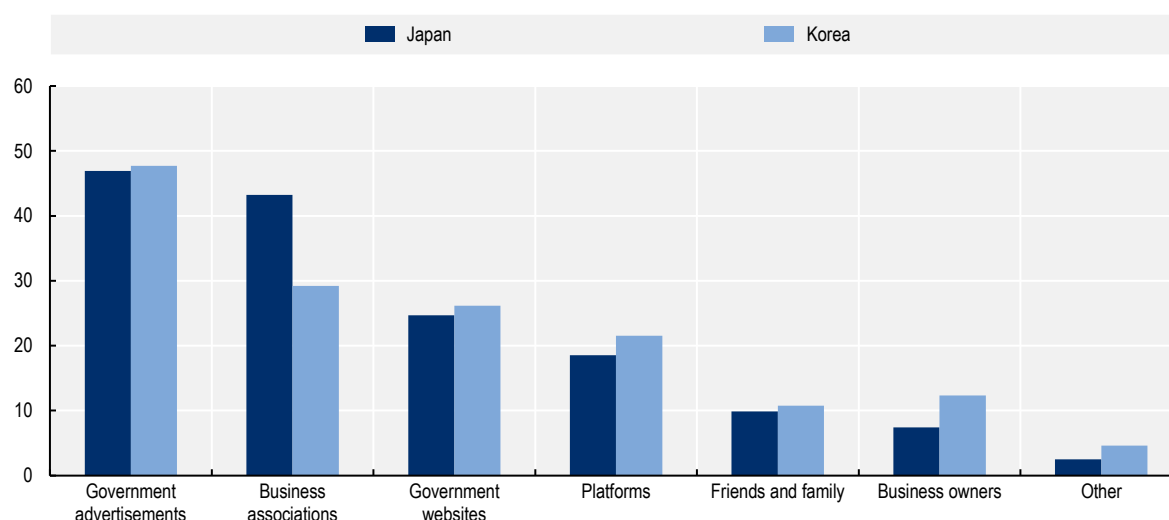
Finally, businesses also highlighted concerns regarding long-term impact of digital programmes. The short-lived nature of digitalisation programmes or supports combined with inadequate maintenance planning and high costs led some businesses to doubt their ability to continue using digital tools after the initial support. The issue of limited autonomy was also highlighted as a barrier to long-term sustainability in digital adoption, with several businesses expressing a preference to develop their digital skills in-house rather than heavily relying on external agencies. Some businesses also expressed a desire to understand the tangible impact of government support programs for digitalisation, aiming to grasp the potential benefits they could derive.

Note: The analysis included text responses from all respondents, not limited to those benefiting from government support programs.  
Source: 2023 OECD D4SME Survey.

**Main sources of information reported by Korean and Japanese businesses knowledgeable about government supports for digitalisation include government advertisements and business associations.** Respectively 47% and 48% of Japanese and Korean businesses that are aware of supports for business digitalisation indicate they learned about them through government advertisement (Figure 33). Business associations is the second most selected source of information by respondent Japanese and Korean businesses but is significantly more widespread among the former, with 43% of Japanese businesses selecting them as a source of information for digitalisation programmes against 29% of Korean businesses. Government websites are also identified as a key source of information by over 1 in 4 businesses in Japan and Korea, followed by digital platforms. Finally, a minority indicate that they rely on friends and family or other business owners for this purpose. These results paint a slightly different picture than the findings from the D4SME hybrid retail survey, where most retailers reported they searched on government portals and websites to find information about digitalisation supports across surveyed countries<sup>13</sup> (OECD, 2023<sup>[3]</sup>).

**Figure 33. Source of information for government supports**

As a percentage of responses from each country



Note: Elaboration based on respondents that indicated they knew about government support programmes. Respondents were given the possibility to select multiple answers.

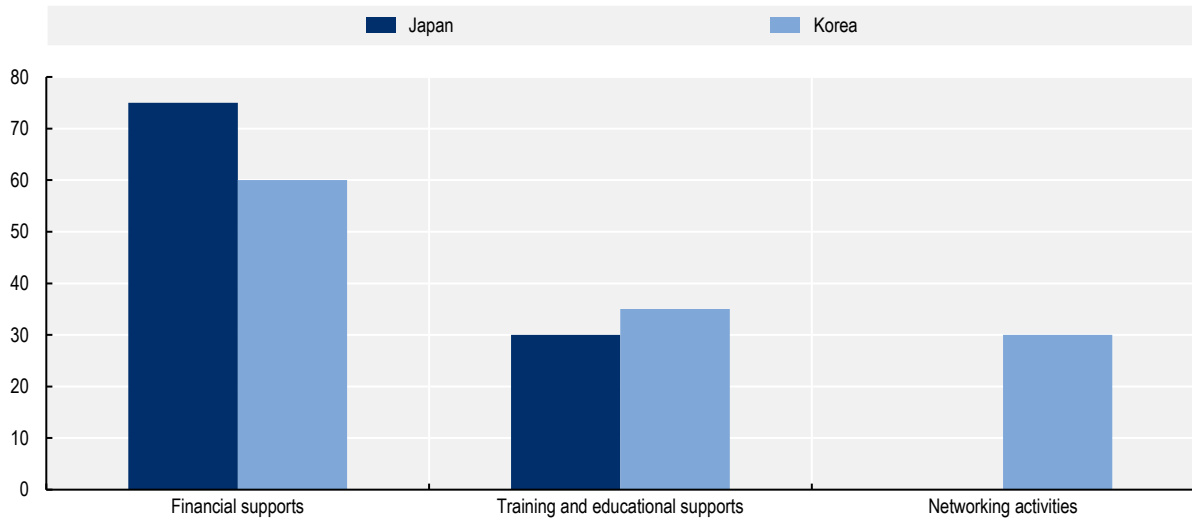
Source: 2023 OECD D4SME Survey.

**Businesses benefitting from government supports mainly report they rely on financial aid.** Among the businesses that received government support for digitalisation, 3 in 4 businesses in Japan and 3 in 5 businesses in Korea received financial supports such as grants, vouchers, tax deductions, or loans. 30% of Japanese and 35% of Korean businesses further benefitted from training and educational supports (Figure 34). While 30% of Korean businesses participated in networking activities such as trade shows, industry conferences, or entrepreneur meetups, this was not a type of government support that Japanese respondent businesses benefitted from.

**More than half (58%) of Japanese businesses report that the supports received were specifically intended for digitalisation, against 37% of Korea businesses.** In other words, 63% of Korean respondents indicate they employed alternative support programmes to finance digitalisation even if they were not specifically intended for this purpose (e.g., COVID-19-related financial support, supports for internationalisation etc.). These results underscore complementary approaches to digitalisation policy support as well as the interconnectedness of digitalisation efforts by businesses and broader economic objectives including broader growth and productivity goals. In fact, digitalisation policies rarely exist in isolation and examples from surveyed countries, outlined below, illustrate how digitalisation is targeted as an enabler of firm-level innovation and scalability.

**Figure 34. Type of supports received by the businesses**

As a percentage of responses from each country



Note: Based on respondents that indicated their business benefited from government supports. Respondents were given the possibility to select multiple answers.

Source: 2023 OECD D4SME Survey.

### ***Selected government policies for SME digitalisation in surveyed countries***

**In recent years, OECD countries have stepped up efforts to enhance the resilience of SMEs through digitalisation.** Aware of the difficulties encountered by SMEs when integrating digital tools and services in their activities, governments have introduced a variety of measures to help SMEs overcome these challenges and reap the full benefits of this transformation. In the following section we highlight specific measures implemented in surveyed member countries or regions – including a policy example mentioned by a respondent business in Colombia (Box 7).

#### **Box 7. Support for the digitalisation of Colombian businesses: “Fábricas de Productividad y sostenibilidad”**

The “Productivity and Sustainability Factories” Programme is a comprehensive initiative by the Colombian Ministry of Commerce, Industry, and Tourism, aimed at bolstering the competitiveness, productivity, and environmental sustainability of businesses in the manufacturing, services, and agricultural sectors. The programme is organised around three pillars: (1) specialised technical assistance in nine service areas to enhance companies' productivity, profitability, and sustainability; (2) the establishment of a network of productivity experts to develop programmes tailored to companies' needs, along with personnel training and development; and (3) the creation of a complementary services network provided by public and private partners through the “Fábricas Te Conecta” platform.

Digitalisation is a critical component among the nine service lines designed to enhance business operations across various domains. Specifically, the digital transformation service line seeks to increase business productivity by leveraging technology to strengthen resilience during crises, optimise internal processes, and enhance customer experiences. The programme offers co-financing for up to 60 hours

of specialised technical assistance, facilitating companies' engagement with technology and digital tools to streamline their operations and expand their market reach.

Administered by local Chambers of Commerce throughout Colombia, the cost of the programme varies based on company size, with SMEs contributing between 10% and 30% towards the total cost of the 60-hour assistance package. A recent impact evaluation by Fedesarrollo, a leading economic research centre in Colombia focusing on policy studies, found a positive perception of effectiveness among participants. The programme had already formed at the time an extensive network of experts and achieved a notable capacity to reach companies relative to similar programs across Latin America (Puyana, Payares and Porto, 2021<sup>[37]</sup>).

Source: (Ministerio de Comercio Industria y Turismo, 2024<sup>[38]</sup>)

### *European Union*

As part of its 2021-2027 *Multiannual Financial Framework*, the European Commission launched the “Digital Europe” funding programme to encourage the implementation of digital technologies by individuals, businesses and public entities in the EU, with a particular focus on SMEs. With a total budget of EUR 7.5 billion, this programme provides funding for projects in five key areas: high-performance computing, cloud technologies, data management and AI<sup>14</sup>, acquisition of advanced digital skills and the implementation of cybersecurity measures. The initiative includes the establishment of innovation hubs across rural and urban areas in the EU, encompassing economically disadvantaged regions. These hubs aim to support SMEs in their twin transitions through the provision of targeted and specialised digital transformation services. The *Digital Europe Programme* has so far supported the implementation of AI and robotics by SMEs through sectorial “Testing and Experimentation Facilities” (TEFs), enabling SMEs to test and scale their technologies in real market conditions or access latest High-Performance Computing (HPC) technologies through the HPC centres under the European HPC Joint Undertaking (EuroHPC JU).

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The budget for the 2023 programme of work amounts to EUR 392 million allocated across various areas. Given the shortage of students in ICT and semiconductors related disciplines, the programme includes the development of a European Semiconductors Skills Academy connecting higher education institutions and relevant industries, including SMEs in microelectronics. The initiative includes the development of a platform among Vocational and Educational Training (VET) centres, to support innovative approaches to attract talents and re-/up-skill the SME workforce. Another component of the programme foresees the implementation of a Cybersecurity Skills Academy including training programmes for SMEs. Finally, the Investment Platform for Strategic Digital Technologies under the InvestEU programme will provide funding to innovative digital startups and SMEs through equity and quasi-equity combining funding from the Digital Europe Programme and the InvestEU guarantee, with a specific focus on cybersecurity. The indicative budget for 2024 is EUR 517.5 million (European Commission, 2023<sup>[39]</sup>).

### *Japan*

In Japan, the “IT implementation subsidies” by the Organisation for Small and Medium Enterprises and Regional Innovation and the Small and Medium Enterprise Agency promote the adoption of IT tools by SMEs across a variety of sectors with a focus on enhancing their productivity (SME Support Japan, 2023<sup>[40]</sup>). To benefit from the IT implementation subsidy, SMEs must first undertake the “Mira Digi Management Check”, an online questionnaire by which businesses answer a series of straightforward questions about management issues and their current digitalisation process. Once completed, the check provides insights into the company’s management challenges and digitalisation progress compared to industry standards. Users have the opportunity to engage with experts for guidance on advancing their digitalisation efforts, exploring new IT tools, and accessing available support measures, all without incurring any costs.

Once the check is completed, SMEs may also complete the application grant procedure for one of the three types of available IT implementation subsidies. All three subsidy frameworks target the improvement of management capabilities of SMEs by encouraging the introduction of different IT Tools but differ in terms of subsidy amounts, rates and target expenses. Overall, these subsidy programmes support the acquisition and introduction of productivity enhancing software. There are specialised targets for the introduction of accounting, ordering, payment or e-commerce software, the implementation of cybersecurity measures utilising “Cybersecurity Supporters Services”, including system monitoring, emergency support, and cyber insurance.

### *Korea*

In June 2023, the Korean SMEs and Startups Agency (KOSME) under the Ministry of SMEs and Startups (MSS) introduced the “Data Value Evaluation Support Project” to bolster the effective utilisation of data among SMEs (KOSME, 2023<sup>[41]</sup>). This programme targets domestic SMEs seeking to make use of their existing data assets more effectively as well as those seeking to leverage their data for value creation. In order to tailor the support to companies’ needs, the programme is divided into three distinct phases, including a digital competency diagnosis, an assessment of the value of the data held by the company and data utilisation consulting services.



The programme aims to support a restricted number of companies during each phase, around 100 for the digital competency diagnosis, 50 for the data valuation step and 10 for the data utilisation consulting services. The digital competency diagnosis evaluates the quality of the data possessed by the company and the company's resources to effectively leverage it. This step distinguishes between companies directly generating and retaining data and those procuring and having recourse to external data sources. The value of the company's data is then calculated, factoring in the initial investment costs for data acquisition and the revenue generated from data sales, facilitating the assessment of the worth of the data retained by each company. Lastly, participant SMEs get access to the data utilisation consulting services encompassing support for the development of data-driven business and production models.

### *The United States*

The U.S. Small Business Administration (SBA) offers a number of supports to SMEs, including access to de-risked loans to purchase or repair real estate, equipment, machinery, or other assets. The SBA also provides non-financial support in the form of one-on-one counselling through its 900 Small Business Development Centres and 140 Women Business Centres. In February 2022, the SBA and the non-profit organisation Business Forward, Inc. launched the Small Business Digital Alliance (SBDA) with the primary objective of providing critical tech resources to small businesses, enabling them to establish and expand their e-commerce operations and achieve scalability. The program seeks to empower small businesses to access and employ digital tools effectively, facilitating growth, and enhancing their competitiveness in the digital economy.

Its key components include access to essential technology resources required to succeed in the digital landscape. The “Digital Tools Library” platform by the SBA includes a comprehensive suite of free resources provided by U.S. tech business leaders to help small businesses expand their customer base, manage their growth, find and retain talent, and enter new markets (SBA, 2022<sup>[42]</sup>). These include tools for e-commerce, data analytics, digital marketing, and other relevant technology solutions as well as free briefings and training sessions aimed at equipping small business owners with the knowledge and skills needed to leverage them. These sessions cover various aspects, such as reaching new markets, finding diverse talent, improving operations, and raising capital. The initiative also seeks to expand the networks of small business owners and facilitate cooperation among leaders in business, government, economic development, and related fields. This collaboration enables entrepreneurs to connect with customers, vendors, lenders, and other stakeholders crucial for their success. Finally, the SBA, Business Forward, and SBDA members host a series of joint virtual and in-person events across the country, including policy briefings on small business trends and showcases of free digital tools available to small businesses.

## Notes

<sup>1</sup> Due to differences in the number of responses in each country, the average across countries is used where relevant to analyse the results in this study, except for business profile-related data and questions where the number of responses by geography was not sufficiently high, that are presented as a percentage of the total number of responses. The methodology used is specified in the subtitles and notes of each graph, as well as in Annex A. In case of sections on take-up of government support, the study focuses on responses by Japanese and Korean businesses due to limited number of responses in other geographies.

<sup>2</sup> The question around the “originality” of content created by LLMs is widely debated across the OECD, due to its potential impact on copyright law and its more profound philosophical meaning (is an LLM “copying” or is it able to actually “learn” in the human sense of the term? For a recap see for example (Davies et al., 2024<sub>[50]</sub>)).

<sup>3</sup> D4SME partners contributed to the 2023 version of the survey include Amazon, the Bogotá Chamber of Commerce, Intuit, Kakao, Rakuten, and Vodafone.

<sup>4</sup> Countries with insufficient number of responses are excluded from analysis to allow for comparisons across different geographies.

<sup>5</sup> Businesses were asked to self-assess their level of digital maturity by responding to the question “How does your business use digital tools”, respondents that indicate “We are digitalising most of our activities” are regarded as exhibiting higher digital maturity and are referred to in the paper as “mostly digitalised”, contrasting with those indicating “We are digitalising some of our activities” or “somewhat digitalised” businesses.

<sup>6</sup> Respondents were asked: “Why is your business not using digital tools for its core activities?” and given the option of selecting a maximum of three answer options. They were subsequently redirected to the “Government Policy” Section.

<sup>7</sup> Please refer to Figure 11 for analysis of businesses’ perception of level of digitalisation of core activities.

<sup>8</sup> Further information on the distribution of SMEs operating online, in-person or hybridly (combining online and physical channels) is provided in Figure 21.

<sup>9</sup> Please refer to Figure 11 for analysis of businesses’ perception of level of digitalisation of core activities.

<sup>10</sup> Please refer to Figure 11 for analysis of businesses’ perception of level of digitalisation of core activities.

<sup>11</sup> Please note that percentages do not add up to 100% as this was a multiple-choice question.

<sup>12</sup> These percentages are calculated without weighting responses by geography.

<sup>13</sup> Countries included in the analysis were France, Italy, Japan, Korea and Spain.

<sup>14</sup> The most relevant recent regulatory effort with LLMs aiming to ensure a safe, transparent, and ethical use of AI is the “EU AI Act” proposed by the European Commission in April 2021. It categorises AI systems

based on their risk levels, determining the extent of regulatory measures required (European Parliament, 2023<sup>[27]</sup>).

<sup>15</sup> The most relevant recent regulatory effort with LLMs aiming to ensure a safe, transparent, and ethical use of AI is the “EU AI Act” proposed by the European Commission in April 2021. It categorises AI systems based on their risk levels, determining the extent of regulatory measures required (European Parliament, 2023<sup>[27]</sup>).

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# Annex A. Methodology and questionnaire

## Methodology

The survey was designed to gather original data on SME digitalisation, considering the global business context characterised by multiple external shocks and transitions. The OECD team has designed the survey to be delivered in co-operation with large private e-commerce platforms and organisations, like Chambers of Commerce, that are partners of the “Digital for SMEs” Global Initiative (D4SME). This means that the target population was confined to the SMEs that are already actively using these large platforms. While a relevant number of responses has been gathered, the sample should not be considered representative of the much broader population of SMEs in the countries analysed.

The questionnaire is formulated in 6 thematic parts: 1) profile of business and respondent; 2) use of digital technology and data; 3) digitalisation journey; 4) digitalisation strategy; 5) mental well-being; and 6) government policy.

To ensure anonymity of the responses, questions that could be used to trace back respondents were excluded from the questionnaire. The survey was prepared following the OECD data protection standards, with the OECD exercising stewardship of the meta data. The survey was distributed in the second half of 2023 in seven OECD countries by four D4SME private sector partners, who shared the link to the survey with SMEs active in their network, namely: France, Germany, Italy, Spain (Amazon), Korea (Kakao), Japan (Rakuten), and the United States (Intuit). The Bogota Chamber of Commerce has facilitated distribution to SMEs in Colombia. However, in light of the limited number of responses, Colombia is not covered in the present analysis except for a case study on digital government supports (Box 7). The period of response collection varies depending on the country, which are as below (presented in the order of survey distribution).

- France, Germany, Italy and Spain: Survey distributed by Amazon, July 2023
- Korea: Survey distributed by Kakao, July 2023
- United States: Survey distributed by Intuit, July 2023
- Japan: Survey distributed by Rakuten, end of October 2023

The D4SME Survey gathered responses from 1 005 SMEs from Japan (561), Korea (249), Europe-4 (113, combining France (44), Germany (15), Italy (33), and Spain (21)), and the United States (82). Due to differences in the number of responses in each country, the average across countries is used where relevant to analyse the results in this study, except for business profile-related data and questions where the number of responses by geography was not sufficiently high, that are presented as a percentage of the total number of responses. The methodology used is specified in the subtitles and notes of each graph. In case of sections on take-up of government support, the study focuses on responses by Japanese and Korean businesses due to limited number of responses in other geographies.

The list of questions distributed across countries is identical.



## Questionnaire

**When was your business established?** (Drop down)

[2023, 2022, 2021, 2020, 2019, 2018, 2017, 2016, 2015, 2014, 2013, Before 2013]

**What is the size of your business as of today?** (Single choice)

- Self-entrepreneur (no employees other than yourself)
- Micro-business (1-9 employees)
- Small business (10-49 employees)
- Medium-sized business (50-249 employees)
- Large business (250 or more employees)

**Which sector best describes your business' main activity?** (Single choice)

- Accommodation
- Administrative and support services
- Agriculture, Forestry, and fishing
- Arts, entertainment and recreation
- Construction
- Education
- Electricity, gas, air conditioning, water and waste management
- Food and beverage services
- Health care and social work
- Information and communication
- Mining and quarrying
- Manufacturing
- Professional services (including scientific, and technical services)
- Public administration and defence
- Real estate activities
- Retail trade
- Transportation, postal and storage
- Wholesale trade
- Other: [Text answer]

**Which country does your business mainly operate from?** (Drop down list of OECD countries)

**Please indicate the postal code of your business.** (Text answer)

**How does your business interact with clients?** (Single choice)

- In-person: We only have on-site location(s) (such as shops, factory outlets, and showrooms) and we rely more on traditional offline interactions (such as phone calls, mails, in-person visits and meetings) with our clients
- Online: We exclusively operate and interact with our clients online
- Both: We have on-site location(s) (such as shops, factory outlets, and showrooms) but we also rely on online interactions (such as marketing on social media, managing online business profile, online sales on e-commerce platforms) with our clients

**Please indicate your position in the company.** (Single choice)

- Business owner

- Chief Executive Officer (CEO)
- Manager
- Employee

**What is your gender identity?** (Single choice)

- Woman
- Man
- Other
- Prefer not to answer

**How satisfied are you with your business' internet speed?** (Single choice)

- Not satisfied
- Somewhat not satisfied
- Somewhat satisfied
- Satisfied

**Why are you not satisfied with your business' internet speed? Please select all that apply.** (Multiple choice)

- Internet speed is slower than advertised
- Higher speed internet is not available in my location
- Higher speed internet is expensive for our business
- Internet connection is not stable
- Other: [Text answer]

**Does your business implement any of the following cybersecurity measures? Please select all that apply.** (Multiple choice)

- Training on cybersecurity, at least once a year
- Use of strong and secure passwords
- Use of two-factor authentication
- Use of regularly updated anti-virus and anti-malware software
- Use of VPN or firewall system
- Regular cyber security assessment with cybersecurity expert
- None of the above

**Has your business ever been hacked?** (Single choice)

- Yes
- No
- I don't know

**How does your business use Artificial Intelligence (AI) in core business products or processes? Please select all that apply.** (Multiple choice)

- We do not use it
- We use custom AI systems developed by experts either within or outside the business
- We use digital tools with AI functions, such as machine learning
- We use generative AI services to create contents and obtain information, such as Chat-GPT by Open AI, Bard by Google, Stable Diffusion by Stable AI
- Other: [Text answer]

**In your opinion, do digital tools with generative AI offer more opportunities or risks to your business? And please explain why.** (Single choice)

- Greater risks, with no opportunity
- More risks, with some opportunities
- More opportunities, with some risks
- Greater opportunities with no risk
- [Text answer]

**Do you monitor your business' environmental impact?** (Single choice)

Such as tracking energy consumption, energy efficiency, and carbon footprint.

- Yes
- No

**Does your business make decisions based on data and track results?** (Single choice)

- Strongly Agree
- Agree
- Disagree
- Strongly Disagree

**How does your business use digital tools?** (Single choice)

- We are digitalising most of our activities and are seeing positive results
- We are digitalising most of our activities but are not satisfied with the results
- We are digitalising some of our activities and are seeing positive results
- We are digitalising some of our activities but are not satisfied with the results
- We are not using digital tools for core business activities

**Why do you use digital tools in your business?** (Multiple choice)

- To lower inventory and supply chain cost
- To broaden customer-base
- To automate processes
- To reduce the business' energy consumption
- To improve monitoring of the business' activities
- To explore new sources of revenue such as creating new products and services
- To enhance the products we offer to clients
- To increase domestic sales
- To increase international sales
- To know more about consumers and enhance interactions with customers
- To implement more flexible working arrangements such as teleworking
- To be seen as attractive to potential employees
- To comply with government regulations
- Other: [text answer]

**What are the main reasons your business has not been able to leverage the full potential of digital tools?** (Multiple choice)

- Hardware costs such as acquisition or reparation of equipment
- Cost of training for using digital tools

- Lack of time for training for using digital tools
- Ongoing maintenance costs such as paying for software, or technical service fee
- Resistance from managers/decision-makers
- Resistance from employees
- Digitalisation has low priority in the business
- Hierarchical and risk-averse organisation
- Not able to find and engage the right external consultancy/experts
- Insufficient talent and digital skills
- Hardware/software incompatible with new digital tools
- Difficulty in finding and hiring qualified employees
- Difficulty in understanding digital laws and regulations such as data protection requirements
- Other: [Text answer]

**Why is your business not using digital tools for its core activities?** (Multiple choice)

- Not knowing enough about digital tools
- Not knowing where to start with digitalisation
- Unclear about legal issues related to digitalisation
- Distrust of digital tools
- Not seeing the benefits of digitalisation
- Concerns about privacy and hacking
- Worries about the impact of digitalisation on mental well-being
- Cost of digitalisation
- Previous failure in digitalisation attempt

**When your business needs digital expertise, what do you typically do?** (Single choice)

- We contract consultant(s)/freelancer(s)/professional(s) outside of our business
- We reassign existing staff to manage digital tools
- We hire digital specialist(s) as staff in the company
- We rely on friends and/or family members
- Other: [Text answer]
- We do not see the need for digital expertise
- I am not sure

**What sources or networks does your business use to identify digital experts? Please select all that apply.** (Multiple choice)

- Friends and family network
- Referrals from other business owners
- Digital agencies or consultants
- Chambers of Commerce / SME Associations
- Job postings on online job boards such as Indeed or LinkedIn
- Online freelancer platforms such as Upwork, Amazon Mechanical Turk or Fiverr
- Local universities or innovation centres
- Government
- Other: [Text answer]

**Does your business provide regular programmes to help employees improve their digital skills?****Please select all that apply. (Multiple choice)**

- We do not provide such programmes
- We encourage mutual-learning among the employees
- We organise internal training programmes
- We organise training programmes with expert institutions
- We provide access to online training platforms for employees to learn at their own pace
- Internet search, including generative AI services
- Other: [Text answer]
- I am not sure

**Which of the following best describes your business' digitalisation process? (Single choice)**

- Employees are encouraged to take initiatives and try new digital tools
- Business owners/CEOs/managers lead decisions on how to digitalise
- Consultants are brought in to bring a "fresh view" and new ideas on how to digitalise
- We rely on online platform(s) that provide us with digital tools
- We do not have a clear digitalisation process

**Does your business offer any of the following to help employees cope with changes due to digitalisation? Please select all that apply. (Multiple choice)**

- Provide incentives to employees, such as monetary or non-monetary bonuses
- Provide regular internal communication of the changes
- Provide psychological support on request
- Gather regular feedback from employees
- Offer trainings/workshops
- Does not apply to the business

**To what extent do you agree with the following statements on digitalisation?**

[Strongly agree – Agree – Disagree – Strongly disagree]

- I feel more isolated and less connected with other workers
- I have no difficulties setting boundaries between personal and professional life
- I feel stressed to adapt to digital tools
- I am able to work flexibly by using digital tools
- I feel burned out as I feel pressure to stay connected

**Do you know of any government programmes(s) for business digitalisation?**

- Yes
- No

**How did you find out about government programme(s)? Please select all that apply. (Multiple choice)**

- Ads from government on TV / social media / newspaper / email
- Chambers of Commerce / SME Associations
- Friends and family
- Other entrepreneurs
- Online platforms / software providers

- Searched for it on government's portal/website
- Other: [Text answer]

**Did your business receive government programme(s) to digitalise your business? If yes, please select all that apply. (Multiple choice)**

- No, we did not receive any support for digitalisation
- Financial supports, such as grants, vouchers, tax deductions, or loans
- Training and educational supports, such as mentoring, information material or guidelines
- Networking activities, such as trade shows, industry conferences, or entrepreneur meetups
- Other: [Text answer]



**Was this programme specifically provided for business digitalisation? (Single choice)**

- Yes
- No, it was another type of programme, for example COVID-19-related financial support or supports for internationalisation

**What was the name of the programme? If several, please provide all the names. (Text answer)**

For more information:

[www.oecd.org/cfe](http://www.oecd.org/cfe)

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