



# SMEs Going Digital: Policy challenges and recommendations



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#GoingDigital

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## ***SMEs Going Digital: Policy challenges and recommendations***

Despite potential benefits, small and medium-sized enterprises (SMEs) lag behind larger firms in their adoption of digital technologies. Moreover, digital adoption by SMEs is to a large extent still confined to basic services, and adoption gaps increase as technologies become more sophisticated. The COVID-19 crisis has accelerated SME digitalisation, but barriers to adoption persist. The stakes are high, not only because SMEs make up most of the business and industrial fabric in most countries and regions, but also because they are strategic actors in large firms' supply chains and play a key role in building inclusive and resilient societies. This Toolkit note identifies the challenges that governments face in enabling SMEs to benefit from digital transformation and outlines key policy recommendations, including: 1) encouraging digital uptake by SMEs, 2) supporting SME training and upskilling, 3) strengthening management skills in SMEs, and 4) leveraging financial technology (Fintech) and alternative sources of finance for SMEs.

Emerging digital technologies have the potential to spur innovation, enhance productivity and improve well-being. Combined together, the Internet of Things (IoT) (which supports machine-to-machine communication and enables the generation of unprecedented volume of data through the hyper-connectivity of devices, sensors and systems); data analytics (which leverages machine learning and new algorithms for data exploration and market intelligence); and cloud computing (which allows storing and processing more information at more affordable cost) are likely to increase firms' capacity for simulation, prototyping, decision making and automation, and hold the promise for the next production revolution (OECD, 2017<sup>[1]</sup>).

Many small and medium-sized enterprises (SMEs) stand to benefit from new digitally-enhanced practices and tools which create unprecedented opportunities for them to overcome the size-related barriers they typically face in innovating, growing and going global (OECD, 2019<sup>[2]</sup>). Yet, SMEs lag in their capacity and capability to undertake the digital transition, and the smaller a firm is, the less likely it is to adopt new digital-enhanced business practices.

The digital uptake of SMEs is to a large extent still confined to basic services, and adoption gaps compared to large firms increase as digital technologies become more sophisticated. Although the majority of businesses are connected to the Internet, information and communication technologies (ICTs) are still primarily seen as a communication tool. Having a website has become a common practice (73% of small firms to up to 94% of large firms in 2018) and using social media for business purposes is frequent (48%-71% of firms) (OECD, 2020<sup>[3]</sup>). However, fewer firms use more advanced ICTs, including data analytics (10%-33%) (OECD, 2020<sup>[3]</sup>).

Digital transformation is also occurring at different speeds, reflecting the great heterogeneity of the SME population. The greatest acceleration in digital diffusion in recent years has been in the conduct of big data analysis (albeit from low levels) and the purchase of cloud computing services. The adoption of business intelligence and supply-chain management software have progressed little, especially among the smallest firms. For instance, smaller firms are particularly less likely to use enterprise resource planning (ERP) systems. Firms adopt ERP systems when they reach a critical size that allows them to handle the complexity and the significant amount of time, financial resources and reskilling required for ERP implementation (Nicoletti, Andrews and Timilotis, 2018<sup>[4]</sup>). Consequently, the ERP diffusion gap is significantly larger between medium and small firms than between large and medium-sized firms.

SMEs must be better prepared for digital transformation. The stakes are high, not only because SMEs comprise most of the business and industrial fabric in most countries and regions, but also because they are strategic actors in large firms' supply chains and play a key role in building inclusive and resilient

societies. At an aggregate level, the SME digital gap has been proven to diminish national productivity performance and to contribute to increase inequalities among individuals, firms, communities and places.

The COVID-19 outbreak is providing a striking example of the role SMEs play in ensuring resilience and sustainability, and how digital technologies can help them improve their business processes and services. Many SMEs have been experimenting with innovative forms of production and sales, often leveraging digital technologies to develop working methods to cope with containment and social distancing measures (OECD, 2020<sup>[5]</sup>).

Business surveys conducted worldwide since the beginning of the pandemic converge in highlighting a rapid uptake of teleworking and digital sales channels among SMEs, signalling an acceleration in their digital transformation. Some countries have taken additional action to help SMEs speed up the transition, as reflected in the OECD monitoring of policy responses to the crisis (OECD, 2020<sup>[5]</sup>). Such policies are framed as more structural approaches to strengthen SME post-crisis competitiveness and ability to address environmental and societal challenges ahead.

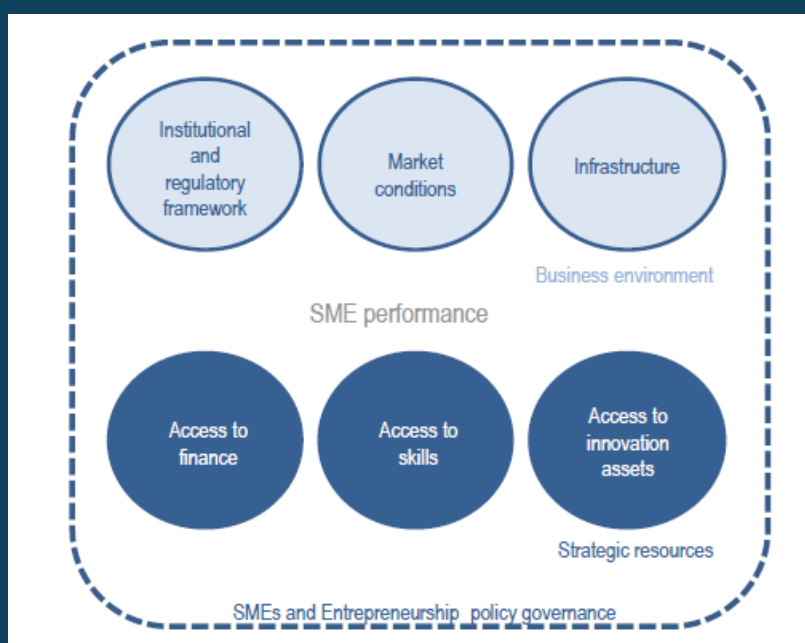
This Toolkit note identifies the challenges that governments face in enabling SMEs to benefit from digital transformation and some key policy recommendations, including: 1) encouraging digital uptake by SMEs, 2) supporting SME training and upskilling, 3) strengthening management skills in SMEs, and 4) leveraging financial technology (Fintech) and alternative sources of finance for SMEs.

## Benefits for SMEs in going digital

Digital technologies alter the conditions under which SMEs do business (Figure 1) and these changing market conditions are likely to benefit smaller and more responsive businesses. Emerging technologies, such as big data analytics, artificial intelligence (AI), blockchain and 3D printing, enable greater product differentiation, better integration of supply chain systems and new business models that leverage shorter distance and time to markets.

At the same time, these technologies can enable the production of bespoke products that require more flexibility and reactivity in supply. Digital technologies also enable a reduction in transaction costs associated with market activities, i.e. access to information, communication and networking, reducing de facto incentives for firms to internalise such activities. This implies that digital technologies may reduce the minimum efficient firm size required for high performance and productivity.

**Figure 1. The 6+1 pillars of SME performance**



**Source:** (OECD, 2019<sup>[2]</sup>).

Digital technologies can also help SMEs integrate with global markets, as they reduce the costs associated with transport and border operations, increase the tradability of many services, and reduces some hidden costs raised by fragmented global value chains (additional management, logistics and operations) (Contractor, 2010<sup>[6]</sup>).

Digital technologies change the conditions under which SMEs access strategic resources. It creates a range of innovative financial services for businesses that traditionally face greater difficulties in accessing finance. Technology-enabled innovation in financial services (also known as Fintech) is increasingly central in the SME finance landscape, including peer-to-peer lending, alternative risk assessment tools, blended financing models and initial coin offerings (ICOs) issuing crypto-assets. Digitalisation also eases SME access to skills through job recruitment platforms, outsourcing and online task hiring, or by connecting them with knowledge partners.

Digital technologies support open sourcing and open innovation, and greater access to innovation assets, such as data, knowledge networks or technology itself. For instance, multinational enterprises (MNEs), through their international production networks, have long served as 'internalised' cross-border transmission channels for goods and services, financial flows, and intellectual property. They increasingly serve as vehicles for the diffusion of digital technologies globally (Gestrin and Staudt, 2018<sup>[7]</sup>). Several factors mediate the extent to which SMEs can translate collaboration with MNEs into

productivity gains (OECD, 2016<sup>[8]</sup>), physical distance being one. Knowledge spillovers from MNEs are the strongest up to 10 km from the lead firm, and progressively decay, partly reflecting production linkages. However, increased digitalisation may reduce the importance of distance.

Digital technologies are also transforming the institutional framework. Digital government and online platforms facilitate public service delivery to SMEs. Digital applications are already spreading across a broad range of areas, from business development services, to license systems, to tax compliance, to courts. In parallel, greater data availability, combined with behavioural insights, is enabling governments to better adapt their services to user preferences, and creates room for policy experimentation (e.g. tax compliance by design).

### **Box 1. The OECD “Digital for SMES” Global Initiative**

The OECD Digital for SMEs Global Initiative (D4SME) aims to promote knowledge sharing on how to enable all SMEs to make the most of the digital transformation, placing specific emphasis on the diverse opportunities and needs of the large “missing middle” of SMEs and entrepreneurs and on their role in an effective, inclusive and sustainable digital transition.

The D4SME Global Initiative is a response to a call from Ministers and high-level representatives from over 50 countries and 12 international organisations at the OECD Ministerial Conference on Strengthening SMEs and Entrepreneurship for Productivity and Inclusive Growth (Mexico City, 22-23 February 2018). At the Conference, Ministers stressed the importance of “fostering conditions for SME adoption and diffusion of innovative and digital technologies, investment in complementary knowledge-based assets and digital security.” In particular, they asked the OECD to strengthen multi-stakeholder dialogue to inform policies that shape conducive framework conditions and remove obstacles to SME digitalisation.

The initiative promotes dialogue on key thematic areas of relevance for SME digitalisation through channels, such as high-level roundtables, thematic workshops, policy hackathons, and digital fora, among others. It also intends to generate useful insights for the OECD Committee on SMEs and Entrepreneurship (CSMEE), formerly the Working Party on SMEs and Entrepreneurship (WPSMEE). The WPSMEE has contributed to the Going Digital project in 2019-20 through its work on the use of data analytics in SMEs, as well as with insights on digitally-driven transformations in the SME finance landscape (Bianchini and Michalkova, 2019<sup>[44]</sup>) (OECD, 2019<sup>[45]</sup>). Furthermore, the *OECD SME and Entrepreneurship Outlook 2019* flagship report documents SME gaps in digital adoption and discusses the business conditions that are critical for SME digitalisation, including access to quality, secure and affordable ICT infrastructure, or access to strategic resources, such as skills, finance, data and innovation assets (OECD, 2019<sup>[2]</sup>). It also explored the impact of digitalisation on market structures and business practices and to which extent emerging business models could benefit firms of smaller scale.



## Policy challenges and recommendations

The SME digital lag arises from a range of factors and barriers, including SME lack of information and awareness, skills gaps, insufficient capital or missing complementary assets such as organisational practices or digital technology itself (OECD, 2019<sup>[2]</sup>). Smaller businesses often face more difficulties in adapting to changing regulatory frameworks, dealing with digital security and privacy issues or simply accessing quality digital infrastructure.

There is a broad-based focus among OECD countries on accelerating digital innovation diffusion to SMEs and ensuring they keep pace with the digital transformation (OECD, 2019<sup>[2]</sup>) (OECD, 2020<sup>[5]</sup>). However, policy approaches vary and, in some areas, diverging viewpoints exist on how to account for the great heterogeneity of the SME population and the diversity of their business ecosystems. While some countries have sought to mainstream SME policy considerations in other policy agendas, others specifically target SMEs with tailor-made instruments, often combined with place-based or sector-wide policy mixes.

### *Encouraging digital uptake by SMEs*

Small enterprise owners are often unaware of the potential new digital tools could offer for improving their business, or they consider the upfront costs of upgrading towards more sophisticated digital technologies too high (OECD, 2017<sup>[9]</sup>). Policy makers have been active in providing SMEs with targeted financial support and technical assistance in diagnosing problems or implementing new digital business solutions, often through small-scale and place-based initiatives. In some cases, financial and technical support is supplemented with training and guidance on the skillset and organisational changes that are required to support technological change.

Government-funded technology extension programmes seek to expand the absorption and adaptation of existing technologies (e.g. equipment, new managerial skills) in firms, and to increase their absorptive capacity (Box 2). While this type of support is not new, the use of technology extension programmes that are targeted at SMEs has expanded over the last decades (Shapira, Youtie and Kay, 2011<sup>[10]</sup>).

### **Box 2. SMEs and technology extension programmes**

Technology extension programmes typically start with an assessment of the firm's operations and processes, followed by a proposed plan for improvement and implementation assistance. Key services include information provision (e.g. to improve the use of existing technologies, trends and best practices); benchmarking to identify areas for improvements; technical assistance and consulting; and training.

Technology extension services are often offered by networks of technical specialists (e.g. engineers), who proactively reach out to firms to organise visits and consultations. However, firms can also reach out for assistance to technology extension programmes.

This type of support is typically offered individually to interested firms, but may also be provided simultaneously to groups of firms with common needs. The first stages of review and diagnosis are generally free of charge, while more intensive projects often require co-financing by the firm, although at lower-than-market prices for consulting services.

### ***SME training and upskilling***

SMEs typically have greater difficulty in attracting and retaining skilled employees than large firms, both because they tend to lack capacity and networks to identify and access talent, and also because they tend to offer less attractive remuneration and working conditions (Eurofound, 2016<sup>[11]</sup>). SMEs also offer fewer training and development opportunities (OECD, 2013<sup>[12]</sup>), often due to the lack of internal capacity to organise training, and lower levels of management skills to anticipate needs (OECD, 2015<sup>[13]</sup>). In addition, the financial costs of tailored training are relatively higher for SMEs because they have less scope to release people from revenue-generating activities for training and because fixed costs are greater per employee. Furthermore, SMEs tend to experience higher job turnover, which reduces their willingness to invest in skills development when there is a risk that an upskilled employee will leave shortly after training (OECD, Forthcoming<sup>[14]</sup>).

### ***Engaging SMEs in training and education***

The policy initiatives deployed to support the development of workforce skills in SMEs (OECD, 2012<sup>[15]</sup>) mainly focus on reducing training costs for firms and promoting the benefits of workplace training. Many OECD countries offer tax incentives to reduce the costs that firms incur for training their employees. Training costs can be, partially or fully, deductible from annual corporate profits in the form of tax exemptions. Such schemes may specifically target smaller firms by offering them enhanced deductions. Smaller firms are also frequently

targeted by direct training subsidy schemes. Training vouchers, for example, help SMEs purchase training hours from accredited individuals or institutions.

Countries aim to raise awareness of the importance of training and skills development in SMEs through various channels, including public and stakeholder organisations. Employer networks and associations can promote skills upgrading in the workplace and foster trust-based relationships between firms that support knowledge-sharing and pooled investments in training. Collaborations across firms can also foster innovation diffusion within regional supply chains, potentially integrating firms into global value chains, which also reduces regional vulnerability to automation (OECD, 2018<sup>[16]</sup>).

Countries are also investing more in “brokers” or intermediary bodies such as group or collective training offices to organise training for groups of SMEs to shift the burden away from individual employers. These organisations often sign apprenticeship contracts with the government while also providing pastoral care and practical assistance to individual apprentices (Box 3). They are particularly useful for SMEs who would not otherwise be able to meet the national minimum apprenticeship training quality standards.

Finally, regulation can encourage skills development. Some countries have introduced statutory rights for employees for training leave. However, their take-up is generally not high (less than 2% of employees benefitting from the measure) (OECD, 2019<sup>[2]</sup>).

### **Box 3. SMEs and apprenticeship**

Many OECD countries are examining the role of apprenticeship programmes as a means of better linking the education system to the world of work. Apprenticeship programmes combine both school-based education and on-the-job training, and typically result in a formal qualification or certificate (OECD/ILO, 2017<sup>[17]</sup>). Many SMEs use apprenticeship programmes because of their benefits in stimulating company productivity and profitability. In countries for which data are available, more than 50% of all apprentices work in companies with 50 employees or fewer (OECD, 2016<sup>[8]</sup>). Apprenticeships are more common in manufacturing, construction and engineering sectors, where employers (and often unions) are well represented and organised (Kuczera, 2017<sup>[18]</sup>).

### ***Strengthening management skills in SMEs***

Governments have several tools at their disposal to help build management skills in SMEs, ranging from the provision of specific training and workshops, the use of digital diagnostic tools to help SMEs identify their management deficiencies, and other, more intensive approaches such as management coaching. Most programmes and initiatives tend to cover business strategy, operating models, process management, performance management, leadership, governance, agility, and innovation. An important component of management skills is financial planning and management (G20/OECD, 2015<sup>[19]</sup>). This includes the ability to conduct risk planning, and provide relevant financial information in business plans and investment projects.

One of the greatest challenges for governments is to create demand for existing support services since many programmes have low take-up rates. This is due to a range of reasons, including a lack of awareness of existing programmes; legitimacy issues around public support operators; doubts on the usefulness of the advice; and limited ambitions for business development and growth.

### ***Leveraging Fintech and alternative sources of finance for SMEs***

Across all stages of their life cycle, SMEs face structural barriers in accessing appropriate sources of finance that are critical to innovate and grow (OECD, 2019<sup>[2]</sup>). Internal barriers include a lack of collateral to be provided to funders and investors as guarantees, insufficient financial skills and a lack of knowledge and awareness about funding options and alternatives. Market barriers include information asymmetries between financial institutions and SME management, and relatively higher transaction and borrowing costs for funding institutions to serve SMEs. These challenges are typically more pronounced in some segments of the business population, especially new firms, start-ups, and innovative ventures with high growth potential, firms in remote and rural areas, or firms led by groups under-represented in entrepreneurship, such as women, youth, seniors and migrants (OECD/EU, 2017<sup>[20]</sup>)).

Online alternative finance activity has been increasingly included in SME finance policies (OECD, 2020<sup>[21]</sup>). Using technologies such as digital identity verification, distributed ledger technologies (DLT), big data and marketplace lending, finance suppliers are offering an array of innovative services with the potential to revolutionise SME finance markets. Mobile banking, (international) mobile payments and the use of alternative data for credit risk assessment can significantly reduce information asymmetries and transaction costs, enabling SME to access finance. Fintech, defined as technology-enabled innovation in financial services, is becoming more and more important in offering more convenient and accessible services, more effective credit risk assessments and lower transaction costs. These instruments can be a unique opportunity for

projects that are too small, too risky, or have a social purpose (OECD, 2018<sup>[22]</sup>), and their strong expansion in particular in the early 2010s has prompted regulators to intervene.

In the context of the exercise to identify effective approaches for implementing the G20/OECD High Level Principles on SME Financing, a large majority of countries reported their support for the development of Fintech solutions (27 out of 38). Regulatory initiatives comprised 19 of these 27 measures. In addition, platforms to inform and connect SMEs to Fintech companies, workshops and the creation of Fintech association were also mentioned (Koreen, Laboul and Smaini, 2018<sup>[23]</sup>).

### ***Improving SME capacity to manage and protect their data and intellectual property rights***

SMEs tend to privilege trade secrecy as their default mode of data protection. Past surveys have showed that small firms consider trade secrecy as an important means of protecting innovation (Cohen, Nelson and Walsh, 2000<sup>[24]</sup>; Jankowski, 2012<sup>[25]</sup>; Hall et al., 2014<sup>[26]</sup>). Trade secrecy can help SMEs ensure they have a lead time advantage – which is a primary mechanism of intellectual property appropriation in some industries. Trade secrecy can also protect complex product designs, which can discourage competitors from engaging in counterfeiting (Rujan and Dussaux, 2017<sup>[27]</sup>; Hughes and Mina, 2011<sup>[28]</sup>).

However, the protection of trade secrets is becoming increasingly difficult. Digitalisation and the revolution in data codification, storage and exchange (i.e. cloud computing, emails, USB drives) are prime drivers of a rise in trade secret infringements (Almeling, 2012<sup>[29]</sup>). Increasing value given to intellectual property (IP) (and *de facto* its misappropriation), staff mobility and changing work culture and relationships (e.g. temporary contracts, outplacement, teleworking) and the fragmentation of global value chains (with more foreign parties involved within more diverse legal frameworks and uneven enforcement conditions) also contribute to increase exposure and risk of disclosure.

#### **Box 4. SMEs and trade secrecy**

Trade secrets are confidential business information that can include new manufacturing processes, improved recipes, business plans or commercial information customers or suppliers. Unlike patents, trade secrets are protected by laws on confidential information, e.g. confidentiality agreements, or non-disclosure or covenant-not-compete clauses.

Trade secrecy remains popular due to its relative ease of use (due to low technical requirements and the absence of formal registration requirements), lower costs incurred for administration and the absence of a definite term of

protection. Trade secrets apply to a range of approaches used by SMEs and can help them capture the value of their innovations, reinforce strategies such as lead-time, product complexity and customer-driven innovation, or support innovation modes emphasising incremental change and open collaboration (Brant and Lohse, 2014<sup>[30]</sup>).

In fact, trade secrecy and patents complement each other. Trade secrecy law “plugs several holes in the patent statute” (Friedman, Landes and Posner, 1991<sup>[31]</sup>) and both offer SMEs distinct tools for comprehensive IP protection. Trade secrets are more likely to be used (often without patents) for process innovation and for innovations in services (the majority of firms in service industries are SMEs). On the other hand, patents are more likely to be used (alone or in combination with trade secrecy) when the innovative product is a physical good (EUIPO, 2017<sup>[32]</sup>). Trade secrecy can also be more suitable for inventions that do not meet the criteria for patentability, especially in profitability terms and at the early stages of product development.

However, laws that protect trade secrets are more difficult to enforce than patent law; trade secrecy law does not protect from fair discovery or reverse engineering; and the secret is lost when disclosed. Also trade secrecy laws are set within national legal frameworks that limit transnational knowledge transfers.

SME data protection is being reinforced while efforts are made to harmonise legislations across jurisdictions and help smaller firms navigate through different regulatory frameworks. Trade secrets have been the subject of increased domestic and international policy attention and trade secrecy laws have been strengthened in Europe and the United States.

The European Union is also engaging reforms of intellectual property right laws as part of its package of measures for creating a Digital Single Market. The Copyright Reform aims in particular at more cross-border access to content online, wider opportunities to use copyrighted materials in education, research and cultural heritage and a better functioning copyright marketplace. The planned Unitary Patent will offer uniform protection in up to 26 EU member states, and enact for patent holders an alternative pathway to the existing European and national patent systems, a centralised procedure at the European Patent Office (EPO) and a uniform litigation system (Unified Patent Court) that is poised to increase legal certainty at reduced costs.

SMEs are acquiring and managing growing data stocks in a context of increased regulatory scrutiny, in particular with respect to data protection and confidentiality. Concerns about data privacy are likely to raise new barriers to smaller firms that have less internal capacity to deal with a complex regulatory environment. The General Data Protection Regulation (GDPR) introduced by the European Union in May 2018 intends to harmonise data privacy laws across

Europe with the explicit goal of protecting and empowering EU citizens' data privacy and reshaping the way organisations approach the issue.

In addition, governments promote the use of intellectual property rights among SMEs through information dissemination, financial support and technical assistance.

### ***Raising SME digital security profile***

SMEs often do not have the resources or expertise to effectively assess cyber-risks and implement appropriate prevention and management measures (OECD, 2019<sup>[2]</sup>). Hyper-connectivity makes digital infrastructure more vulnerable, adding layers of complexity, volatility and dependence to existing infrastructures (OECD, 2017<sup>[33]</sup>). Digital security threats appear to be increasing in terms of sophistication, frequency and magnitude, and unintentional breaches can also result from misuses of personal data, e.g. due to an employee's inadvertence, or accidental losses of data.

Although SMEs are a "smaller target" for cyber-attacks, the risk of security incidents is likely to increase with the wider use of IoT, the rise of e-commerce, the proliferation of big data and the use of data analytics for mining data. On the positive side, SMEs that can demonstrate robust digital security and privacy practices may have a competitive edge in setting business partnerships, especially with larger corporations. SMEs' ability to include digital security risk management in their operational protocols will therefore become increasingly important for their integration into the global economy.

Governments are increasingly focusing on the promotion of digital security among SMEs. In a 2017 OECD survey, 82% of the reviewed countries saw digital security risk awareness by SMEs as a specific objective. However, only 46% of them have developed specific incentives (rewards and/or sanctions) for promoting digital security risk management. Japan and Korea provide tax incentives for companies that invest in digital security products (OECD, 2017<sup>[33]</sup>).

### ***Deploying high-quality communications infrastructure and platforms***

Communications infrastructure is critical for sustaining digital diffusion among SMEs. Studies of German and Irish firms show that the use of broadband connections has a positive and significant impact on their innovation activity (Bertschek, Cerquera and Klein, 2013<sup>[34]</sup>; Haller and Lyons, 2015<sup>[35]</sup>). Accessing high-speed networks allows SMEs and entrepreneurs to connect to suppliers and customers, obtain real-time information and respond in real-time to fast-evolving markets and supply chains. High speed digital networks also enable smaller-scale businesses to build digital capacity, e.g. through cloud computing services (Box 5). Although firms are increasingly moving towards high-speed



fixed broadband, stimulated by more affordable access prices, there are wide and growing cross-country and cross-firm divides in connection, with smaller firms losing ground in the transition (OECD, 2019<sup>[2]</sup>).

### **Box 5. SMEs and cloud computing uptake**

Firms have increasingly turned towards the cloud for accessing emails, storage or data management capacity (OECD, 2019<sup>[2]</sup>). Cloud computing allows SMEs to access extra processing or storage capacity, as well as databases and software, in a scalable manner. In addition to its flexibility and scalability, cloud computing reduces the cost of technology upgrading by exempting firms of upfront investments in hardware and regular expenses on maintenance, IT team and certification. In addition, cloud computing enables the dissemination of other technologies and enable technological catch-up. New mobile forms of work have increased the use of cloud computing, as firms adopt platform-independent technologies that can be accessed anywhere and from any device (e.g. smart phones, desktops, laptops etc.).

SME use of cloud computing services is likely to expand in the near future, as barriers to adoption are progressively overcome and SME owners become increasingly aware of the potential to gain flexibility and reduce costs. General technology diffusion may also increase pressure from competitors and encourage SMEs to follow the trend.

However, trust issues remain a major obstacle. It has become apparent that the preservation of data sovereignty is a key reason for SMEs to retain on premise IT and data solutions. The loss of data control is closely associated with the uncertainty of data location, which raises uncertainty around the application and jurisdiction of data protection regulation. Likewise, the lack of open standards within the cloud provider community makes it harder for cloud computing users to switch between providers, increasing the risk of technological lock-in.

As a consequence, users can become extremely vulnerable to providers' pricing policies, especially as new developments in data analytics may enable providers to profile their users and engage in price discrimination. These fears may be further exacerbated by the current high market concentration of the cloud industry (Kushida, Murray and Zysman, 2011<sup>[36]</sup>).

Many countries have engaged in comprehensive strategy exercises, with a strong focus on strengthening public-private dialogue and private sector participation in infrastructure development (OECD, 2017<sup>[37]</sup>; ITF, 2017<sup>[38]</sup>). In addition, subnational governments play a vital role in the infrastructure landscape, and regional and municipal infrastructural policies are likely to grow in relevance as cities and regions are increasingly responsible for policy design and implementation. In such a vast and complex space, a whole-of-government approach including ministries, departments and agencies across different levels



of jurisdiction, becomes necessary in order to take account of interrelated effects and cross-cutting and diverging interests. Governments also adopt more participative forms of governance, with small businesses increasingly involved in policy debate and policy making process, e.g. through public consultations or multi-stakeholders discussion mechanisms (OECD, 2019<sup>[2]</sup>).

Governments are also encouraging SMEs to access key network infrastructure and platforms through the establishment of facilities which provide a physical environment for the exchange of knowledge and expertise and contribute to networking, information dissemination and collaboration. Clusters' premises, facilities and activities can give SMEs access to technologies that they might not otherwise be able to afford. Moreover, SMEs operating in clusters might be able to benefit from other agglomeration effects, such as improved access to a pool of skilled labour, or more visibility to capital venture investors. The joint use of research equipment to leverage cutting-edge equipment, or the access to super-computing capabilities to leverage the potential of big data analytics are examples of policy options in place.

## Annex. A selection of SME digitalisation initiatives

### Encouraging SME digital uptake

#### ***National Strategy for the Digital Transformation of SMEs in France***

**Responsible entity:** The Ministry for Economy, Finance and Recovery (France)

**Description:** The French National Strategy for the Digital Transformation of SMEs Helps SMEs finance their digital transformation with regional vouchers.

**Read more:** <https://www.francenum.gouv.fr/comprendre-le-numerique/transformation-numerique-des-tpe-et-pme-quelles-conditions-de-succes-et>.

#### ***Sector partnerships for SME digital technology adoption in New Zealand***

**Responsible entity:** The Ministry of Business, Innovation and Employment and the Ministry for Primary Industry (New Zealand)

**Description:** The sector partnerships for SME digital technology adoption are a new project for encouraging better use of digital technologies by SMEs. The initiative has been developed jointly with technology industry associations, regional economic development agencies, and the wider business community. The project is being tested with three pilot sectors: arable farming, tourism and construction.

**Read more:** <https://www.mbie.govt.nz/dmsdocument/11638-digital-technologies-industry-transformation-plan>.

#### ***National Strategy of Digitalisation: Connected Industry 4.0 in Spain***

**Responsible entity:** The Ministry of Industry, Trade and Tourism (Spain)

**Description:** The National Strategy of Digitalisation: Connected Industry 4.0 targets firms in the manufacturing sector through awareness and information campaigns and training, technology platform and a national network of Digital Innovation Centers in support of multi-sectoral partnerships, assistance for the business development of Industry 4.0 technology suppliers and initiatives for encouraging the adoption of new manufacturing technologies, including financing.

**Read more:** <https://www.industriaconectada40.gob.es/estrategias-informes/estrategia-nacional-IC40/Paginas/descripcion-estrategia-IC40.aspx>.

## SME training and upskilling

### ***Tax credit for on-the-job training in Quebec (Canada)***

**Responsible entity:** Revenu Quebec (Canada)

**Description:** Tax credits were increased in 2018 from 24% to 32% for trainees enrolled in an education programme (among other special programmes) with an aim to increase the incentive for SMEs to train their staff.

**Read more:** <https://www.revenuquebec.ca/en/online-services/forms-and-publications/current-details/tp-1029.8.33.6-v/>.

### ***Personal Training Account (Compte Personnel de Formation) in France***

**Responsible entity:** The Ministry of Labour, Employment and Integration (France)

**Description:** The Personal Training Account provides every employee with a personal training account accessible online and valid throughout the employee's entire career. Every employee receives 24 hours of training per year worked (for a full-time post) until they reach a threshold of 120 hours. Above this threshold, 12 hours a year are received up to the threshold of 150 hours. The Personal Training Account replaced the 2003 Individual Right to Training.

**Read more:** <https://www.moncompteformation.gouv.fr/espace-prive/html/#/>.

### ***Skillnet Ireland***

**Responsible entity:** The Department of Further and Higher Education, Research, Innovation and Science (Ireland)

**Description:** Skillnet Ireland is a national agency dedicated to the promotion and facilitation of workforce learning in Ireland. Skillnet Ireland funds more than 15 000 companies and provide learning experiences to more than 50 000 trainees. Member companies actively participate in determining their own training needs and how, when and where training will be facilitated. Programmes are optimised to suit the needs of employed learners, through both formal and informal learning that spans further education and higher education provision. In 2018, Skillsnet Ireland had a 29% increase in its budget to help make workplace training more responsive to a rapidly changing world of work and to increase its focus on enterprise-led programmes.

**Read more:** <https://www.skillnetireland.ie/about/about-skillnet/>.

### **Competence vouchers in Lithuania**

**Responsible entity:** The Ministry of Economy and Innovation (Lithuania)

**Description:** Competence vouchers are granted to employers to purchase training services for employees within 12 months. The EUR 4 500 vouchers can be used towards 80% of the training costs for the micro, small and medium enterprises and 70% for large enterprises. The scheme is operated by the Ministry of Economy and Innovation with support from the European Social Fund.

**Read more:** <https://invega.lt/en/competence-voucher-returning-state-measure-reimbursing-costs-employee-qualification-training/>.

### **UK Small Business Leadership Programme**

**Responsible entity:** The Department for Business, Energy & Industrial Strategy (United Kingdom)

**Description:** The UK Small Business Leadership Programme looks to provide management training to 2 000 small business leaders in its first year (2018) with and aims to scale-up to reach 10 000 beneficiaries by 2025. The Small Business Leadership Programme is part of package of measures aiming to assist businesses in improving their productivity, This also includes the strengthening of local networks focused on business improvement, getting the UK's leading businesses signed-up to mentoring programmes, and promoting "Knowledge Transfer Partnerships" whereby postgraduates are placed in businesses to translate their research insights into business growth.

**Read more:** <https://www.gov.uk/guidance/small-business-support-schemes-small-business-leadership-programme-and-peer-networks>.

## **Leveraging Fintech and alternative sources of finance for SMEs**

### **Crowdfunding and cryptocurrency bill in Mexico**

**Responsible entity:** The House of Congress (Mexico)

**Description:** The Crowdfunding and cryptocurrency bill seeks to protect investors, inject trust and transparency in the market and minimise risks of fraud and money laundering. In addition, government provided support for the creation of an association bringing together major crowdfunding platforms.

**Read more:** <http://gaceta.diputados.gob.mx/PDF/63/2018/feb/20180222-II.pdf#page=2>.

### ***Finance platform referrals in the United Kingdom***

**Responsible entity:** The HM Treasury (United Kingdom)

**Description:** If any of nine designated UK banks are unable to supply the funding an SME requests from them, they are required to offer the SME a referral to (currently) three designated finance platforms. These designated finance platforms each have diverse lending panels, including niche alternative finance providers and responsible finance providers who may be able to help the SME access finance. In addition, the UK Financial Authority has taken an active role in monitoring online financing activities and providing a regulatory framework in support of their development.

**Read more:**

<https://www.ukfinance.org.uk/system/files/Referrals%20Factsheet-UKF-February-2018.pdf>.

## **Improving SME capacity to manage and protect their data**

### ***European Trade Secrets Directive***

**Responsible entity:** The European Parliament and the Council of the European Union

**Description:** The European Trade Secrets Directive aims to standardise existing and diverging national laws against the unlawful acquisition, disclosure and use of trade secrets (European Commission, 2016<sup>[39]</sup>). The Directive was brought into force in 2018 in order to enable companies to exploit and share their trade secrets with privileged business partners across the Internal Market. For instance, registering trade secrets on the blockchain could be considered as a "reasonable step (...) to keep [the information] secret".

**Read more:**

<https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32016L0943>.

### ***US Defend Trade Secrets Act***

**Responsible entity:** US Congress (United States)

**Description:** The United States strengthened trade secrecy protection through the Defend Trade Secrets Act of 2016, which creates federal civil cause of action and provides a choice between treating localised disputes under state laws or treating disputes under federal law (US Patent and Trademark Office, 2017<sup>[40]</sup>). Courts can protect trade secrets by enjoining misappropriation, ordering parties that have misappropriated a trade secret to take steps to maintain its secrecy, or ordering payment of royalties, award damages, court costs and attorneys' fees.

**Read more:** <https://congress.gov/114/plaws/publ153/PLAW-114publ153.pdf>.

### ***Patent Scheck (patent voucher) in Austria***

**Responsible entity:** Research Promotion Agency (FFG) (Austria)

**Description:** The Patent Scheck is a grant worth EUR 12 500 that helps small firms assess the patentability of their ideas with a patent examiner of a Patent office. If patentable, the grant then covers the costs of a professional patent attorney and application fees. About 80% of the beneficiaries so far have been clients new to the IP-System.

**Read more:** <https://www.ffg.at/en/programme/patentvoucher>.

### ***IP Strategic Plan in Spain***

**Responsible entity:** The Ministry of Energy, Tourism and Digital Agenda (Spain)

**Description:** The Spanish IP Strategic Plan introduces a number of actions for improving IP quality, transfer and internationalisation. SMEs and entrepreneurs are offered grants and subsidies to adopt national patent and utility models. Regional agreements between regional governments and the Spanish Patent and Trademark Office have also been concluded for developing a network of regional centres that provide applicants with information on IPRs and their prosecution.

**Read more:**

[https://www.oepm.es/export/sites/oepm/comun/documentos\\_relacionados/sobre\\_oepm/Plan\\_Estrategico\\_2017\\_2020.pdf](https://www.oepm.es/export/sites/oepm/comun/documentos_relacionados/sobre_oepm/Plan_Estrategico_2017_2020.pdf).

## Raising SME digital security profile

### *Go Digital in Germany*

**Responsible entity:** The Federal Ministry for Economic Affairs and Energy (Germany)

**Description:** The Germany's Go Digital programme provides SMEs with external consultancy on IT security, online marketing and digital business process.

**Read more:** <https://www.bmwi.de/Redaktion/DE/Artikel/Digitale-Welt/foerderprogramm-go-digital.html>.

## Deploying high-quality digital infrastructure and platforms

### *National Infrastructure Assessment in United Kingdom*

**Responsible entity:** National Infrastructure Commission (United Kingdom)

**Description:** The first-ever comprehensive National Infrastructure Assessment aims to identify needs and priorities for the country until 2050. The assessment includes recommendations on digital networks as well as new transport, low carbon energy, recycling and waste management.

**Read more:** <https://nic.org.uk/studies-reports/national-infrastructure-assessment/#:~:text=The%20National%20Infrastructure%20Assessment%20looks,infrastructure%20should%20be%20paid%20for.>

### *Incubator Support Program in Australia*

**Responsible entity:** The Department of Industry, Science, Energy and Resources (Australia)

**Description:** The Incubator Support Program helps a new generation of innovative firms to succeed in the market by providing them low cost access facilities and international knowledge networks. It is part of the National Innovation and Science Agenda, an AUD 1.1 billion package focused on innovation and entrepreneurship.

**Read more:** <https://business.gov.au/Grants-and-Programs/Incubator-Support-New-and-Existing-Incubators>.

### ***Future Internet of the Things-IoT-Lab in France***

**Responsible entity:** The Department of Industry, Science, Energy and Resources (France)

**Description:** The FIT\_IoT Lab provides large-scale Internet of Things testbeds with over 2 700 wireless sensor nodes in a variety of topologies and environments, and both fixed and mobile nodes. It is part of the OneLab Consortium created in 2014 to provide single entry point for federated infrastructure.

**Read more:** <https://www.iot-lab.info/legacy/index.html>.



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