SME adoption of digital technologies: a Transatlantic view

Stefano da Empoli and Giusy Massaro, October 2021

1. Comparing digital adoption by large companies and SMEs

The adoption of digital technologies in the business sector is spreading rapidly, from the provision of digital products and services online to robotized production processes, the Internet of Things (IoT), big data and artificial intelligence (AI), and other applications, including the use of digital systems to manage back-office tasks.

Digital tools bring many important benefits for firms, by facilitating access to resources and supporting innovation, and by helping small and medium-sized enterprises (SMEs) integrate into global markets, through reduced transaction and transport costs. Yet, despite the benefits and opportunities that digital technologies bring, and the significant increase in uptake in recent years, many SMEs continue to lag behind in adopting them.

SMEs are the backbone of both the American and European economies but are weighted differently. US SMEs account for over 99% of the total and for more than 40% of jobs. In the European Union, SMEs represent 99.8% of the total number of businesses and account for nearly two thirds of employment. Moreover, EU micro enterprises – those with 1-9 employees - are much smaller than those in the US. The average size in the EU is 2.1, while in the US the average is 2.6. On the other hand, SMEs[1] (10-49 and 50-249 employees, respectively) seem to be slightly larger, on average, in the EU than in the US.
In general, SMEs lag behind in digital technology adoption, in all areas and in every country. According to a recent OECD report[2], the gap in SME diffusion rates as compared to large firms is a recurrent feature across all technologies. Small firms remain less digitalised than medium-sized firms, and medium-sized

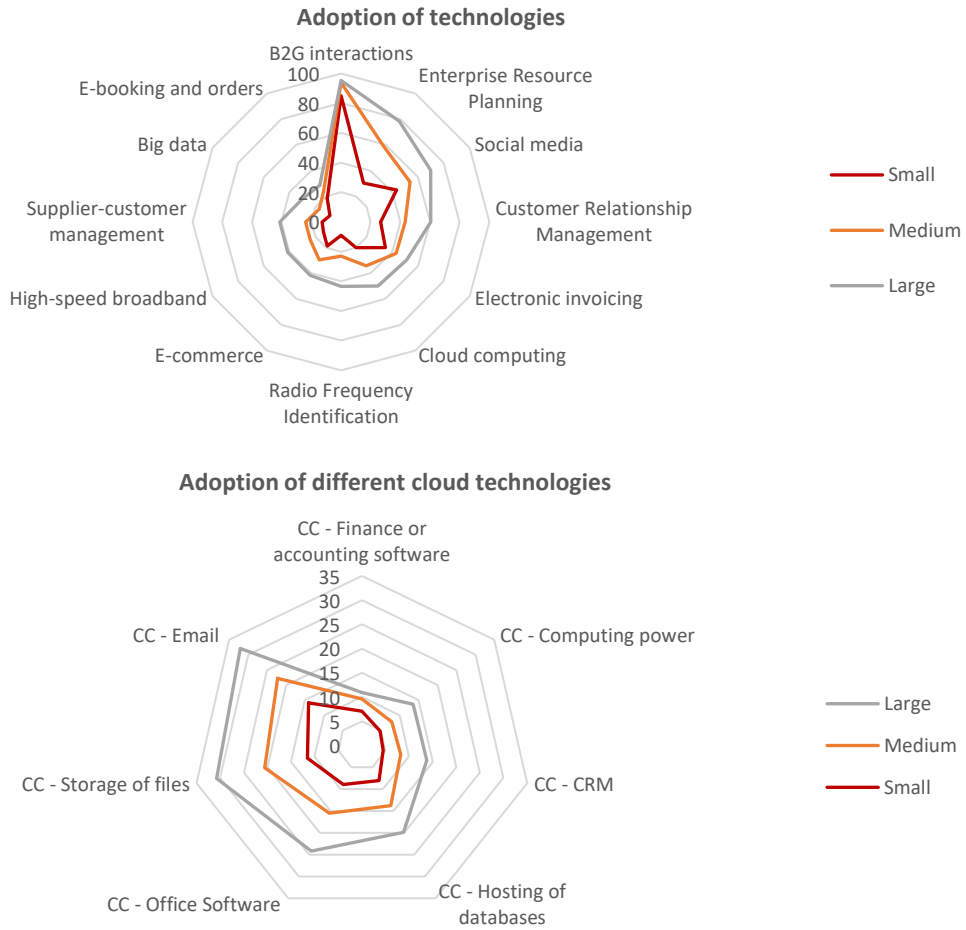
[1] According to the US classification, SMEs include firms with fewer than 500 employees. However, in order to make data comparable between the US and the EU, we used data from the OECD.

[2] OECD (2021), *The Digital Transformation of SMEs*, OECD Studies on SMEs and Entrepreneurship, OECD Publishing, Paris, *https://doi.org/10.1787/bdb9256a-en*.

firms less than large firms. In fact, overall, diffusion patterns are relatively similar between small, medium-sized and large firms, the larger moving just faster along the diffusion curve.

In particular, in the OECD countries, SMEs tend to firstly digitalize general administration and marketing operations. However, it is seen that adoption rates differ little in B2G interactions (Fig.1), where the spread is quite similar (85%, 94% and 95%, respectively for small, medium and large enterprises). As well, there are relatively small differences in the use of social media and electronic invoicing. Differences increase for customer relationship management (CRM) and e-commerce where the gap between small and large enterprises reaches 34 and 23 percentage points (p.p.), respectively.

Fig. 1: Adoption of technologies in the OECD countries, by size class



Source: OECD

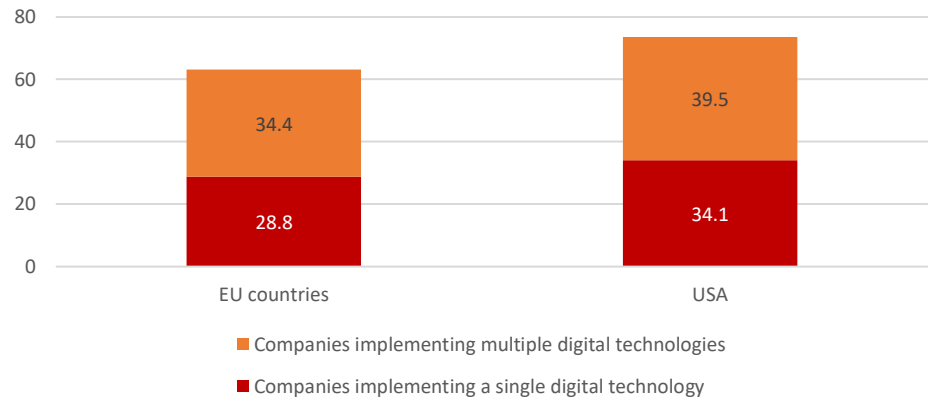
However, the gap in adoption for SMEs grows increasingly as technologies become more sophisticated (e.g. data analytics) or mass matters. For instance, the relatively low rate of adoption of enterprise resource planning (ERP) systems is due to the fact that their implementation is complex and requires an amount of time, financial resources and reskilling that can be justified only if a critical size is reached. As a result, large firms have largely invested over time in the integration of business processes as well as logistics management (Rfid), leaving SMEs behind. There are also striking differences across firms in their use of cloud computing, despite the potential of "pay-as-you-go" CC services, allowing for improving IT capacity and potentially reducing costs.

As depicted by the latest EIB Group Survey on Investment and Investment Finance[3], published by the European Investment Bank (EIB), the EU is lagging behind the US in digital adoption, with 63% of surveyed firms having implemented at least one digital technology, compared to 73% in the US (Fig. 2). A gap exists regarding both enterprises adopting a single technology (28.8% vs. 34%) and those adopting multiple technologies (34.4% vs. 39.5%).

The digital gap between the EU and the US is particularly wide where smaller firms are concerned. Digital adoption rates are strongly linked to size, with larger firms displaying higher rates of digital adoption than smaller firms (Fig. 3). In the EU, only roughly 52% of SMEs have implemented at least one digital technology, almost 8 percentage points (p.p.) less than US SMEs. On the other hand, 75% of large firms are already digital, with a 4 p.p. gap relative to the US. Perhaps unsurprisingly, large firms are also much more likely to have implemented multiple technologies, and this is especially true for EU companies. For the latter, the single technology adoption rate does not differ between the two groups, whereas for large European companies the adoption rate of multiple technologies is on average more than double that of EU SMEs. Where US companies are concerned, they show higher rates for both single and multiple technologies adoption. It is worth noting that European large companies seem to be slightly more likely than US ones to adopt multiple technologies (≈47% vs. 45%).

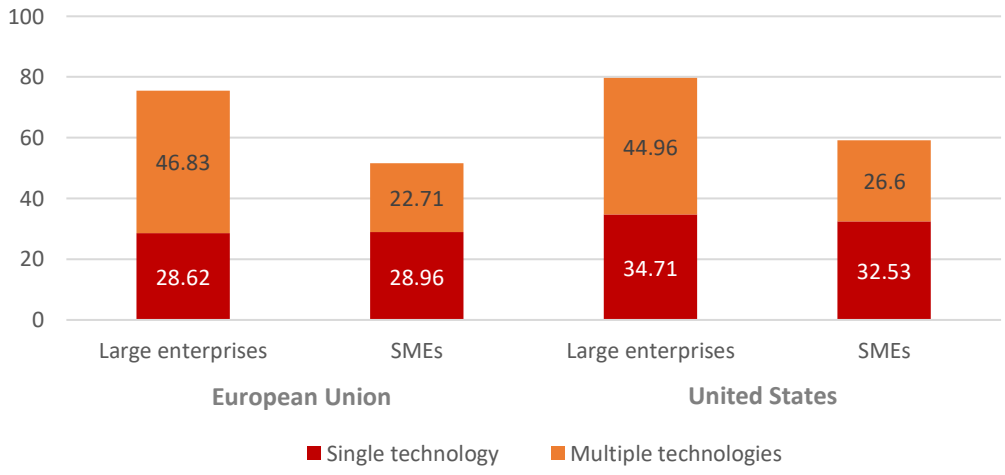
[3] The annual EIB Group Survey on Investment and Investment Finance is a yearly EU and international-wide survey that gathers qualitative and quantitative information on the investments of SMEs and larger corporates, their financing requirements and the difficulties they face. It covers approximately 12,000 firms across the EU27, 600 in the UK and 800 in the US.

Fig. 2: Adoption of technologies (2020)



Source: European Investment Bank (EIB)

Fig. 3: Adoption of technologies, by firm size (2020)

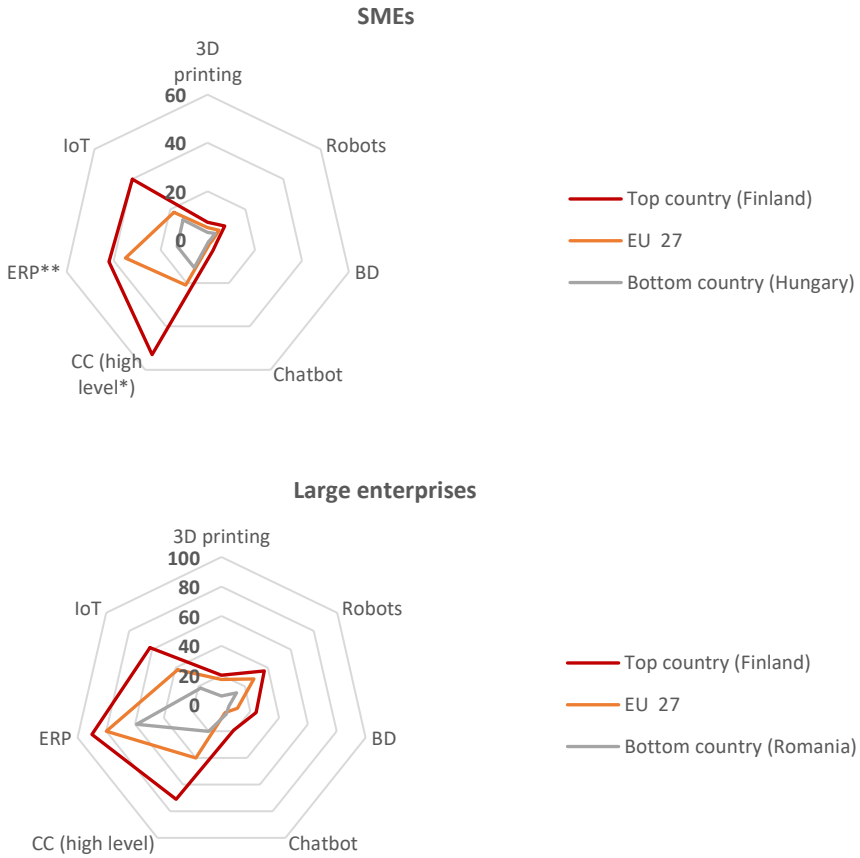


Source: European Investment Bank (EIB)

The adoption rates, though, largely vary not only depending on firm size but also within the geographical areas considered. Within the EU, for instance, the situation appears to be very different regarding both SMEs and large enterprises (Fig. 4). For the former, there is a very pronounced gap between the performance of the best and the worst country, especially in the adoption of ERP (42% vs. 13%), cloud computing (53% vs. 13%) and IoT (40% vs. 13%), while in the remaining technologies the gap is less clear basically because of an overall low adoption rate (below 10% even in the top country). Across large enterprises, differences are also considerable, overall in the adoption of cloud computing, with a gap of

51 p.p. between the first and the last countries. 71% of Finnish large enterprises use high-level cloud computing solutions (such as accounting software applications, CRM software, computing power), compared to only 20% of Romanian large companies. Substantial differences can also be seen in the adoption of IoT (62% vs. 18%) and ERP (90% vs. 59%), as well as for robots and big data, where the gap is around 20 p.p.

Fig. 4: Adoption of selected technologies within the EU, by firm size (2020)



Source: Eurostat

* Accounting software applications, CRM software, computing power

According to a paper by Ruckert, Veugelers and Weiss[4], small firms that are not digitally active are considerably less likely to have digital investment expansion plans compared to those that are already digitally active, thus, possibly exacerbating the digital divide across firms, both in the EU and the US.

[4] Rückert, Désirée; Veugelers, Reinhilde; Weiss, Christoph (2020), "The growing digital divide in Europe and the United States", EIB Working Papers, No. 2020/07

Consequently, economies with many SMEs are especially vulnerable to corporate digital polarization. In addition, the paper found that "persistently non-digital" firms are less likely to be innovative, to create new jobs and to command high mark-ups. Therefore, lifting firms out of persistent digital non-activity should be high on the policy agenda.

2. Critical factors and possible areas for pro-active policies

The entry point for the digital transition for most SMEs is in general administration or marketing functions (involving online interactions with the government, electronic invoicing, use of social media, but also e-commerce), where the digital gaps between SMEs and larger firms are relatively smaller.
Structural barriers to digital adoption appear to be:

- an internal skills gap that prevents managers and workers from identifying the digital solutions they need, and to adapt business models and processes;
- a financing gap, as SMEs face difficulties in accessing finance for intangible digital investments that cannot be easily used as collateral to secure a loan;
- an infrastructure gap. Access to high-speed broadband is a prerequisite for the digital transformation of SMEs. Penetration rates of high-speed broadband have been increasing in all OECD countries since 2011, but the leading countries and firms have been pulling away from the rest, and gaps between firms in lagging countries have widened significantly. Based on the most recent OECD data[5], in 2020, about 46% of EU firms had a broadband connection with a download speed of at least 100 Mbps, but, for example, Slovak companies lagged largely behind their Danish peers (32% vs. 75.5%). A wide gap also concerns the subscription of connections with a download speed of at least 1 Gbps, with rates ranging from 2.8% in Estonia to 18.5% in Denmark and 20.4% in Portugal (EU average: 9.2%).

High quality access to communication networks and services needs to be made available at affordable prices for all people and firms in order to address the increasing demand for data generated by the billions of devices online. This also involves governments expanding coverage in rural areas, either by directly investing or by encouraging private investment through incentives (competitive tendering for partial tax exemption, lower spectrum fees, loans at a reduced interest rate).
Addressing barriers to skills should also be a priority for policymakers in order to support firms to digitalize further, by reducing training costs (through tax incentives or subsidies) and strengthening the digital awareness of SME top management.

[5] Data for the US is not available

Similarly, addressing the regulatory burden and the uncertainties that regulation can create should also be high on the digital policy agenda. For a regulatory framework to be supportive, policymakers need to harmonize legislations on trade secrecy and IPR protection across jurisdictions, enforce data protection regulations, developing digital security legislations, set standards for the industry and ensure the well-functioning of knowledge markets where SMEs can access digital solutions.

Additional measures useful to promote digital technology adoption by SMEs could be:

- promoting e-government and e-services for SMEs, through digital portals, e-invoicing, e-signature, adoption of new digital technologies in public services (e.g. blockchain, AI) and through open government data;
- encouraging SME access to digital platforms, that allow them to reach markets at a significantly lower cost (e.g. marketing, distribution, etc.);
- providing SMEs with access to data and technology, though experimentation labs, data centers, digital innovation hubs, university transfer offices;
- building a data culture in SMEs, by increasing awareness and capacity to manage and protect their data, thus raising the digital security profile of SMEs;
- encouraging business innovation and the supply of new digital solutions, through research and innovation policies (e.g. research grants, public procurement, tax incentives, competence centers, public-private partnerships, etc.) in the field of digital security, blockchain and AI.

However, while policymakers should ensure that small firms can access and take advantage of core digital tools, it is also important that this approach is complemented with sector-specific and function-specific approaches that promote the most relevant technologies for their own business. In fact, different economic sectors may need different digital technologies at different intensities.