Digitalisation of Spanish SMEs

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This report was prepared for the European Investment Advisory Hub at the request of Fundación Cotec Spain to prepare a study that assesses the current status of digitalisation in Spanish small and medium-sized enterprises (SMEs), identifies the barriers to digitalisation, reviews approaches taken across peer jurisdictions and suggests focus areas to reduce the digital gap and incentivise SMEs to launch digital transformation programmes.

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- COTEC Spain
- Ministry of Economic Affairs and Digital Transformation — State Secretariat for Digitalisation and Artificial Intelligence
- SPRI Group (the entity of the Economic Development, Sustainability and Environment Department of the Basque government for promoting Basque industry)
- CEOE (Spanish Confederation of Employers' Organisations)
- Google
- Telefónica
- Vodafone
- BBVA
- Santander
- CaixaBank
- HP
- Seaya Ventures

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CONTENTS

EXECUTIVE SUMMARY

The European Investment Bank (EIB), COTEC Spain and Oliver Wyman have conducted a study to identify the barriers to digitalisation for Spanish small and medium-sized enterprises (SMEs) and to suggest recommendations to reduce their impact.

The study refers to digitalisation as the use of digital technologies to change a business model and provide new revenue and value-producing opportunities; it is the process of moving to a digital business. The analysis, research and development of recommendations was undertaken using existing information coupled with in-depth desk research, including international reference points, and extensive engagement and support from COTEC and other public and private sector organisations.

The study is based on a three-step approach, as follows:

1. **Assessment of the current status of digitalisation in Spanish SMEs**
   Small and medium enterprises play a pivotal role in the Spanish economy, representing 72% of the workforce, 99% of enterprises and 61% of the value added. However, the adoption of digitalisation by Spanish companies is low or very low for 75% of them (in line with the EU average).
   Spain ranks ninth out of 27 in the European Digital Economy and Society Index (DESI). However, this does not necessarily mean that it is in a good position in all areas of digitalisation, lagging behind in two key aspects: human capital and integration of digital technologies.
2. **Identification of the barriers to digitalisation for Spanish SMEs**
   Despite the digitalisation of small and medium enterprises being high on the Spanish government's agenda, having recently launched a plan for digitalisation with €4.7 billion in the budget for NextGenerationEU post-COVID funds, there is on average a low demand for digitalisation from Spanish small and medium enterprises. 34% of such companies do not plan to invest in the next three years, especially micro and small companies, which is almost double the EU average (18%). Spanish companies are behind on the adoption of technologies (only 27% have e-commerce sales despite 75% of them having a website). This is mainly because they are not aware of what tools can be used to improve/digitalise their business. A majority of small and medium enterprises also lack a full understanding of the solutions available or do not have the required skills among their employees to use the technology/extract its full potential. There is typically also a lack of digital skills among employees, which prevents them from fully developing or implementing new digital solutions, as well as a more general undersupply of information and communications technology (ICT) talent in the market.
   Even though there are plenty of technological solutions in Spain, sometimes it is difficult for smaller vendors to respond to the needs of small and medium enterprises due to the lack of capabilities to fully tailor the response or missing possibilities to scale the business.
   While funding has not been the main problem of SME digitalisation in recent years given the plethora of public and private programmes, there is still room for improvement: Spanish small and medium enterprises rely very heavily on bank financing (as opposed to leasing and equity) and loans/credit usually come with high interest rates and/or strict collateral requirements as well as complex paperwork (around 70% of Spanish companies come across obstacles when accessing financing versus 55% for the European Union).

3. **Review of approaches taken across peer jurisdictions**
   This involved identifying and reviewing relevant best practice case studies on SME digitalisation worldwide, in particular in Germany, Luxembourg, France, Singapore and Denmark. The focus was on assessing how these countries promoted and supported the digitalisation of small and medium enterprises and extracting relevant lessons for Spain. These are integrated in the recommendations below.

The extensive research and stakeholder consultations, including in-depth interviews, helped to identify a number of concrete recommendations to increase the level of digitalisation of Spanish small and medium enterprises and thereby support the national economic development agenda.

The study suggests four areas on which the government, the private sector and civil society should focus to reduce the digital gap and incentivise small and medium enterprises to launch their digital transformation:

- **Define a truly national SME digitalisation strategy and evaluation framework for the coming years:** The digitalisation of Spanish small and medium enterprises is already high on the Spanish government's agenda; in recent years it has launched various ambitious programmes and initiatives to tackle the challenge of SME digitalisation, coupled with specific measures. But these efforts need to continue, with a simplified and consolidated roadmap towards digitalisation, going beyond the NextGenerationEU funds and redefining some of the current measures to create an inclusive programme that brings together all relevant public and private stakeholders.
- **Launch an integrated online matching platform for SMEs**: Create an online platform that helps small and medium enterprises find the appropriate resources to support their digitalisation needs. The platform would include a self-assessment module to help them understand where they are in the digitalisation process, a digitalisation solution matching module to find the appropriate digitalisation package to suit their needs, and finally a financing module to guide them in finding financial support for their digital transformation.
- **Attract and develop digital talent**: Train/reskill existing employees and develop new talent in small and medium enterprises, embed digital literacy better in the educational curriculum and extend the range of digital-related university degrees in order to help reduce the digital gap across the population. National or European public funding instruments could be leveraged to accelerate and expand relevant short, medium or long-term training programmes.
- **Scale up the government's role in fostering SME digitalisation**: Government investment in and incentives for SME digitalisation and ecosystem development should be maintained, with spending and funding schemes focusing on the most effective digitalisation initiatives. Government schemes can be usefully complemented by financing instruments available through regional, national and supranational institutions including the EIB.

1. INTRODUCTION TO DIGITALISATION

This study refers to digitalisation as "the use of digital technologies to change a business model and provide new revenue and value-producing opportunities; it is the process of moving to a digital business."[1] The digital transformation has often been called the "fourth industrial revolution"[2] and it is of vital importance to ensure a competitive advantage in the global economy and to deliver growth and jobs. The definition of digitalisation and digital innovation can be quite broad. As such, it can be interpreted and understood in different ways. In order to create a common understanding, we see digitalisation as impacting three main areas:

- **Products**: Driven by the development of the internet of things, digitalisation aims to increase the integration of ICT in all types of products. This includes the development of markets such as the connected and self-driving car, wearables, and smart home appliances.
- **Processes:** Digitalisation aims to increase automation in production and integrate simulation and data analytics in processes and supply chains, thus bringing substantial and continuous gains in productivity and resource efficiency over the full cycle from product design to lifecycle management. New frontier technologies, such as artificial intelligence (AI), will have a significant impact on both the possibility to automate more complex processes and leverage innovative data sources.
- **Business models:** Digitalisation aims to reshuffle value chains and blurs the boundaries between products and services. Smart and connected products both drive and adapt to changes in customers' behaviour, often resulting in co-created, highly personalised services. In addition, businesses can now leverage new paradigms and techniques, such as 3D printing, to reinvent their business and operating models.

[1] Gartner, Information Technology Glossary, https://www.gartner.com/en/information-technology/glossary/digitalization
[2] World Economic Forum.

2. DIGITALISATION STATUS IN SPAIN

2.1. Assessment of SMEs digitalisation gaps — findings

Digitalisation is not just about acquiring IT equipment and systems, as it encompasses fundamental business dimensions. In essence, SME digitalisation covers the following areas:

- **Clients**, in the form of products (such as the increasing integration of the internet of things in all types of products) or sales channels (such as mobile apps and websites).
- **Internal control and efficiency**, aiming to improve processes and production (via robotisation, e-business); this could also include digital interfaces for partners in the value chain (suppliers) and for providers (banks).
- **Business models**, aiming to reshuffle value chains and give greater weight to the technological tools available to small and medium enterprises in Spain.

We have looked at SME digitalisation in Spain from three perspectives: demand for digitalisation from small and medium enterprises; supply of suitable products, and matching mechanisms for supply and demand. On the demand side, it is critical that these businesses are aware and see the benefits of the digital tools available (such as data analytics and workflow management). Moreover, they need to have the technical and financial capabilities to exploit those tools. On the supply side, tech vendors and other parties need to be aware of the needs and difficulties that small and medium enterprises face. Tech vendors need to develop the right capabilities and business models to be able to offer a value-adding proposition that fits the strategic needs of such companies. Additionally, they need to rescale their production/customer coverage capabilities to be able to match increasing demand. Finally, a market matching system needs to be put in place that brings together small and medium enterprises and tech providers in order to improve the digitalisation of such companies while benefiting all parties involved. Among others, this includes marketing efforts, joint product and proposition development, as well as pricing mechanisms.

Figure 1. Digitalisation gap assessment framework[3]

Demand (Traditional SMEs) →	**Market matching**		← **Supply (Tech providers)**
Awareness	Awareness/knowledge	Marketing	Awareness of SME market
Business needs	Product suitability (standard vs. tailored)	Product development	Strategic fit of SME market
Technical capabilities	Coaching/advisory	Training that addresses needs	Ability to implement
Financial capabilities	Price/financing	Pricing, volume and costs	Financial capabilities
National strategy and public-private coordination Government agencies can play a central role through the definition of a national strategy and prioritisation, coordinated across all key elements of the strategy (e.g. education, advisory, financial support)			

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[3] Source: Oliver Wyman analysis.

2.2. Relevance of SMEs for the Spanish economy

Small and medium enterprises play a pivotal role in the Spanish economy. They are defined as companies with less than 250 employees, an annual turnover of up to €50 million or a balance sheet total of no more than €43 million, following EU classification.[4] They can be further broken down by their size: microenterprises have less than ten employees, small enterprises have between ten and 49 employees and medium-sized enterprises have between 50 and 249 employees. In this report, "small and medium enterprises" and "SMEs" refer to all micro, small and medium-sized enterprises.

Small and medium enterprises make up 99% of active enterprises in Spain (approximately 2.8 million). 95% of these are microcompanies (around 2.6 million), 5% are small companies (around 0.13 million), 0% (when rounded to a whole number) are medium companies (around 15 000), and 0% are large companies (around 3 300). Comparatively, the EU average for small and medium enterprises is 67% of active enterprises. This is significantly lower than the Spanish value of 99%, demonstrating their importance in the Spanish economy.

The importance of Spanish small and medium enterprises in the economy is clearly demonstrated by their contribution to value added. 60% of value added in Spain is attributed to companies of this size (25% to microcompanies, 18% to small companies and 18% to medium companies). Large companies account for 39% of value added.

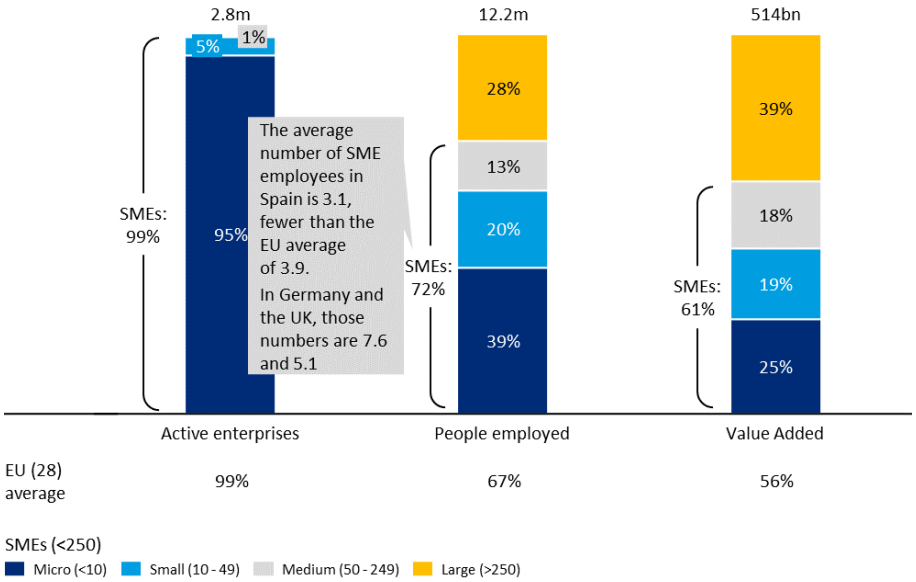
Small and medium enterprises are responsible for 72% of people employed in Spain, but only contribute to 61% of value added; lower competitiveness and efficiencies can be inferred**.** Therefore, they generate less value per person than large corporations, where the percentage of value added is 39%, which is higher than the percentage of people employed (28%). The average figures for the European Union follow a similar pattern, with 67% of the workforce belonging to small and medium enterprises but only 56% of value added being attributed to them. This suggests that the problem of improving the value added generated by small and medium enterprises applies not only to Spain but also to many other EU countries.

The average number of SME employees in Spain is 3.1, which is less than the EU average of 3.9. In Germany it is 7.6 and in the United Kingdom it is 5.1. Having fewer employees could potentially lead to lower levels of productivity and lower value added, hence it could be a limiting factor on levels of digitalisation. This average is also lower within SME groups: Spanish microcompanies are smaller than their EU peers and Spain has a higher number of self-employed people than its peers.[5]

[4] Note that this is an official EU definition.

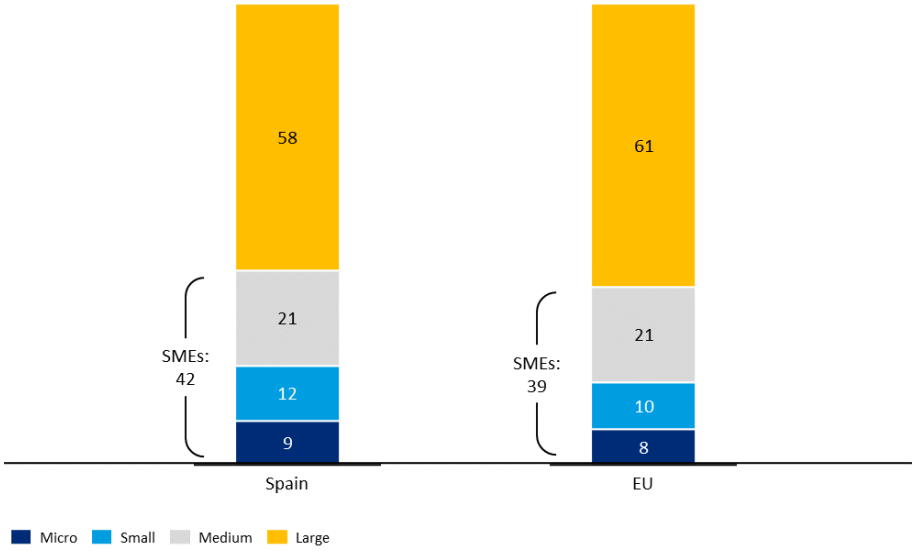
[5] According to the Organisation for Economic Co-operation and Development (OECD), 16.45% of Spain's active population in 2018 were self-employed, compared to 10.17% in Germany and 11.61% in France; in many cases, self-employed people are de facto companies of one employee, exacerbating the challenges of a company with a small number of employees.

Figure 2. SME share of key variables[6]



The importance of small and medium enterprises to the Spanish economy is further demonstrated by their contribution to Spanish exports. In Spain they make up 42% of exports, compared to 39% for the European Union. Spanish microfirms contribute 9% of exports and small firms contribute 12%, which are both higher than the EU equivalent figures of 8% and 10%, respectively. Medium enterprises contribute 21% for both the European Union and Spain.

Figure 3. Contribution to exports in thousand euros to all countries of the world,[7] *in %*

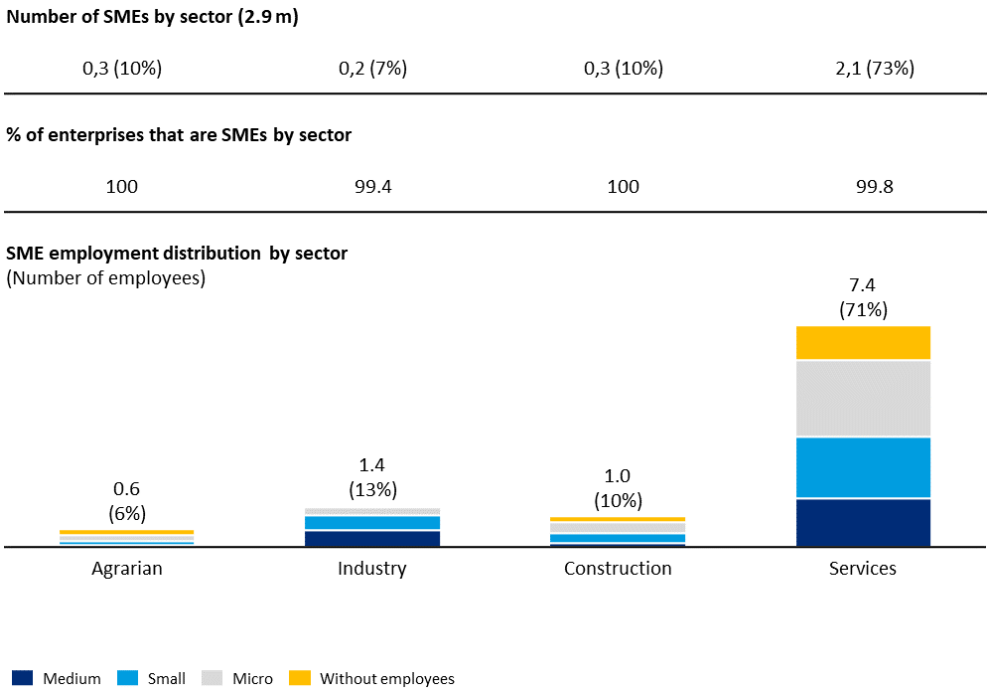


The majority of SME employees in Spain work within the services sector. The services sector accounts for 71% of SME employment, equating to approximately 2.1 million small and medium enterprises. 99.8% of enterprises within the services sector are small and medium-sized.

Overall, no relevant deviation has been identified between the Spanish contribution to exports and the European average contribution to exports.

[6] Source: European Commission 2019 SBA fact sheet Spain, Oliver Wyman analysis.
[7] Source: Eurostat, Oliver Wyman analysis.

Figure 4. SME by sector[8,9]
2021, total employees = 10.4 million

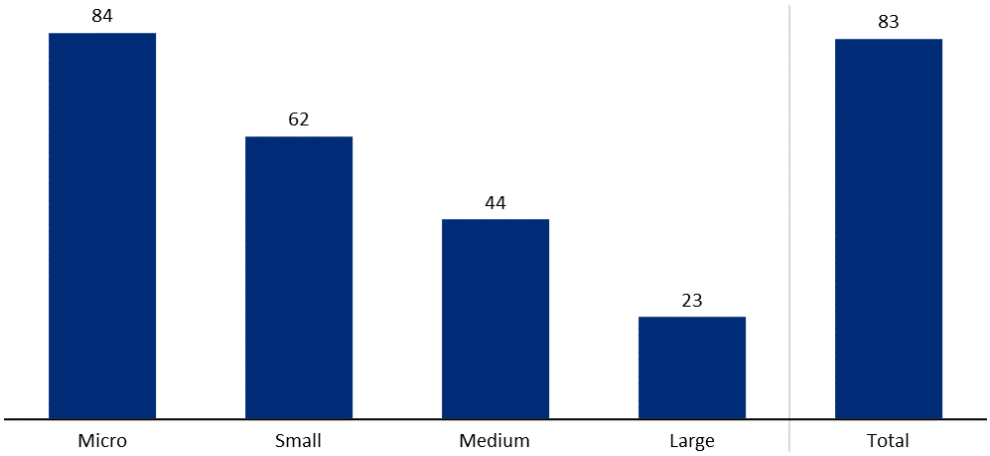


Today, the total **percentage of family-owned enterprises in Spain is around 89%,** or 1.1 million companies, which is higher than in other European countries (according to the European Commission, "family businesses make up more than 60% of all companies in Europe.".) In Spain, they create 67% of private employment and are responsible for 57% of private sector gross domestic product (GDP).

In 2015, 84% of microcompanies were family enterprises; for small, medium and large firms the corresponding statistics were 62%, 44% and 23%. Small family companies do not focus on finding talent elsewhere since most of the workers are relatives — this has positive effects on the motivation of employees but a potentially negative impact on finding the right talent for each position, especially in terms of digital knowledge. This could be an explanation as to why small and medium enterprises make up 99% of the Spanish economy but only contribute 61% to value added. Not only that but, as mentioned, no intention to increase investment is detected, hence no more reskilling or upskilling will take place, salaries will not grow, no digital professionals will be hired and therefore the productivity will still be low, as highlighted.

[8] Source: Government of Spain, Ministerio de Industria, Comercio y Turismo (Ministry of Industry).
[9] Note: Total companies without employees: 1.6 millions; of which 72% in services.

Figure 5. Proportion of family enterprises by number of employees[10]
Spain 2015, %



2.3. Level of digitalisation in Spain

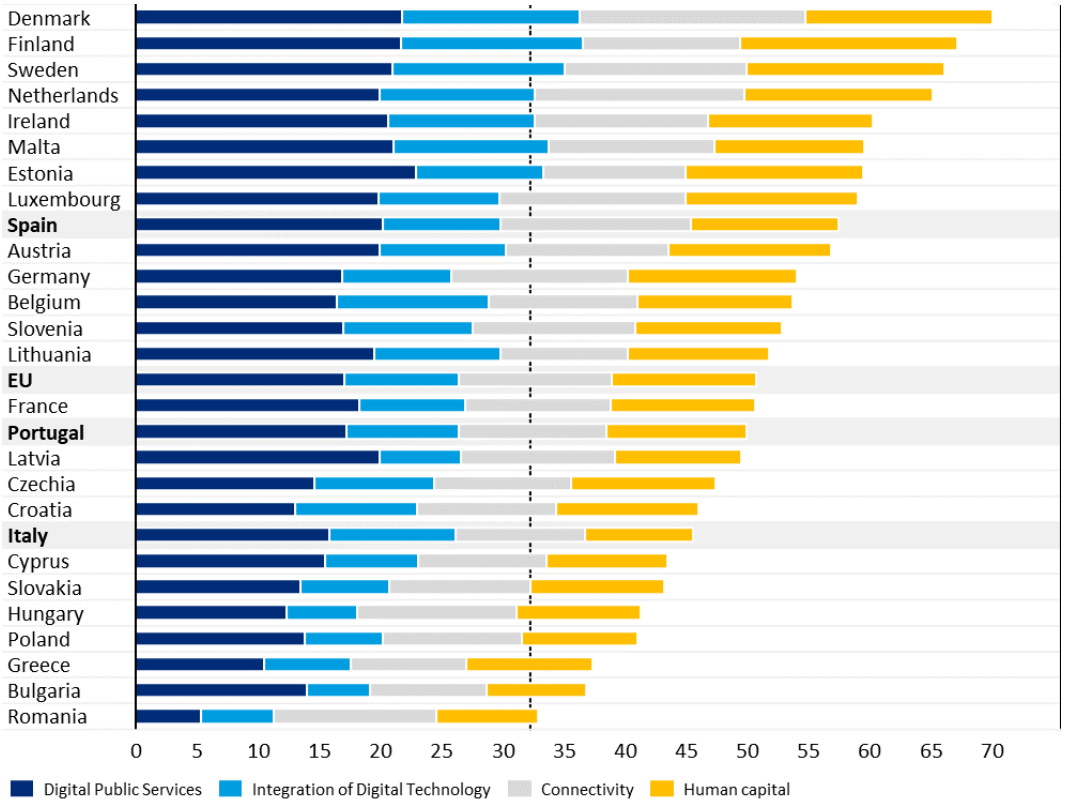
A combination of metrics and indices are used to measure the level of digitalisation in Spain and enable a comparison to be made between Spain and other EU countries, specifically the Digital Economy and Society Index (DESI), the Digital Intensity Index (DII), Eurostat and the Small Business Act (SBA) fact sheets. These indices and metrics show trends over a large time period and throughout this study they will be complemented with information obtained in surveys, interviews and studies.

Spain ranked ninth among the EU Member States in the European Commission's 2021 Digital Economy and Society Index[11], a composite index that measures EU Member States' digital performance and competitiveness. This index aggregates the results of each county according to five key dimensions:

- Human capital
- Connectivity
- Integration of digital technology
- Digital public services

[10] Not taking into account companies without employees, self-employed ("autónomos") Source: INE, Oliver Wyman Analysis.
[11] The weights of some of the DESI components changed between 2020 and 2021, so comparison across years could potentially be misleading.

Figure 6. Digital Economy and Society Index — 2021[12]



Spain ranks ninth among the 27 EU Member States in the European Commission's 2021 edition of the Digital Economy and Society Index. Spain is a good performer in **digital public services (seventh)** thanks to the digital-by-default strategy throughout its central public administration, mainly for everything related to payments and taxes (treasury department). Spain also performs very well in **connectivity (third),** given, among other things, the many kilometres of fibre to the home (FTTH) deployed. When it comes to **human capital (12th),** Spain has been improving over the last few years, but there is still room for progress, especially on the ICT specialist indicator. Spain is lagging in the **integration of digital technologies (16th)** and needs to put more effort into this area; enterprises are not yet taking sufficient advantage of new technologies such as artificial intelligence, big data and the cloud, which could help further develop productivity and e-commerce. However, its score in this area is in line with the EU average and the increase in small and medium enterprises selling online during the COVID-19 crisis will presumably have a positive impact in this area in the following years.

In the last couple of years, the Spanish authorities have adopted an ambitious digital agenda. For example, in 2020 the national government launched Digital Spain 2025[13] (see Box 1 below) to promote Spain's digital transformation through a set of reforms up to 2025, as well as significant public and private investment. Additional specific plans have been launched under the agenda in areas such as human capital, connectivity, and digitalisation of business.

[12] Source: DESI 2021.
[13] https://portal.mineco.gob.es/RecursosArticulo/mineco/ministerio/ficheros/210204_Digital_Spain_2025.pdf

A National Digital Skills Plan[14] was presented in early 2021 — also financed with NextGenerationEU funds — which includes an exhaustive set of measures to strengthen digital skills among the workforce and the general public. Spain is currently a medium performer compared to other European countries on the human capital dimension and this strategy will help its population to make better use of the opportunities provided by the digital economy and society.

Spain performs very well in connectivity and has improved considerably in recent years (eighth in 2018, fifth in 2019 and 2020, and third in 2021) thanks to fibre deployment and 5G readiness across the country. However, a wide digital gap between urban and rural areas remains, being one of the key challenges of the country's connectivity. Improved coverage would also support the digital transition of the Spanish farming sector and allow it to better monitor and optimise agricultural production. In 2020, Spain launched the Strategy for the promotion of 5G[15] to improve spectrum assignment and management across pioneer bands and incentivise 5G deployment and use. Spain's Connectivity Toolbox roadmap includes several measures to reduce the cost of deploying broadband.

In terms of the integration of digital technologies by business, as stated in the Digital Economy and Society Index 2021, "Spanish businesses are still not taking full advantage of the online economy and SMEs are lagging behind on digitalisation"; Spain ranks 16th across EU members, in line with the EU average. The adoption of digital technologies by small and medium enterprises could be improved: for example, only 22% of enterprises use cloud services (against an EU average of 26%), 22% use artificial intelligence, but only 9% rely on big data analysis. Digital transformation and the uptake or deployment of emerging technologies can boost the innovative capacity of the Spanish economy, driven by small and medium enterprises; in 2021, Spain launched the SME Digitalisation Plan 2021–2025[16] to boost disruptive innovations and entrepreneurship in digital. The country also launched a National Artificial Intelligence Strategy,[17] and participates in significant large-scale European projects.

In addition, Spain has adopted an ambitious digitalisation plan for small and medium enterprises, has boosted digital skills in education and employment, and has usefully prioritised Recovery and Resilience Facility funding for that purpose with a strong set of coherent support actions. All these plans are either part of or linked to the Spanish National Recovery and Resilience Plan, financed by the NextGenerationEU recovery instrument.

Spain performs very well in e-government and continues to make progress with new developments, such as defining a reference framework to manage identification[18] and cooperating with Germany on building an ecosystem of digital identities, including a cross-border pilot and an information exchange in the area of self-sovereign identity.[19] In 2020, Spain adopted a specific plan for the digitalisation of its public administration[20] and a law on electronic trust services, and created the Data Office Division. In 2021, it also approved the Regulation on the functioning and operation of the public sector by electronic means.

[14] https://portal.mineco.gob.es/RecursosArticulo/mineco/ministerio/ficheros/210902-digital-skills-plan.pdf
[15] https://portal.mineco.gob.es/RecursosArticulo/mineco/ministerio/ficheros/210204_Strategy_for_the_promotion_of_5G.pdf
[16] https://portal.mineco.gob.es/RecursosArticulo/mineco/ministerio/ficheros/210902-digitalisation-smes-plan.pdf
[17] https://portal.mineco.gob.es/RecursosArticulo/mineco/ministerio/ficheros/201202_ENIA_V1_0.pdf
[18] https://www.boe.es/boe/dias/2021/01/11/pdfs/BOE-A-2021-413.pdf
[19] https://portal.mineco.gob.es/es-es/comunicacion/Paginas/210729_np_ecosistema.aspx
[20] https://portal.mineco.gob.es/RecursosArticulo/mineco/ministerio/ficheros/210902-digitalisation-of-public-admin-plan.pdf

2.3.1 Spain DESI 2021 — Human Capital

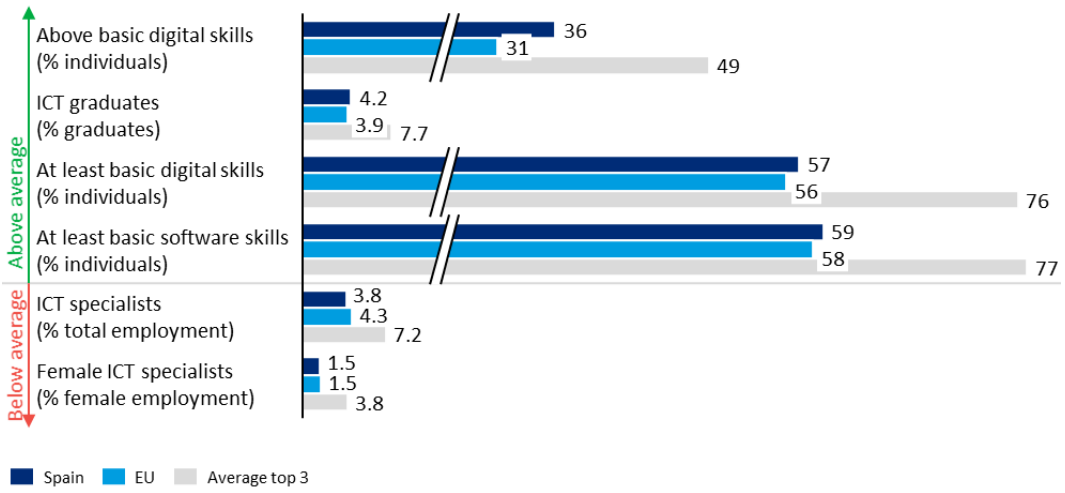
Figure 7: DESI human capital — 2021[21]

DESI component scores - DESI Spain vs. EU

Component	Spain rank	Spain score	EU score
Overall	9th	57.4	50.7
Human capital	12th	48.3	47.1
Connectivity	3rd	62.0	50.2
Integration of digital tech	16th	38.8	37.6
Digital public services	7th	80.7	68.1

Human capital: Performance for the analysed indicators

DESI 2021, Spain vs. EU vs. average top 3 countries by indicator



Deep diving into human capital, Spain ranks 12th among the 27 EU countries. 57% of people in Spain have at least basic digital skills, just above the EU average but still far from the target of 80% of the European population with at least basic digital skills by 2030.[22] In addition, 36% of the Spanish labour force still do not have basic digital skills,[23] hampering the further digitalisation of businesses and the uptake of advanced digital technologies. The proportion of ICT specialists increased to 3.8% of total employment in 2020; in 2018, the share of ICT specialists accounted for 3.5%. Despite some progress, the shortage of ICT specialists is still a productivity-constraining factor, especially for small and medium enterprises. The gender imbalance remains significant and female specialists only account for 20% of all ICT specialists (just above the EU average of 19%).

[21] Source: DESI 2021.
[22] Target defined in the European Pillar of Social Rights action plan.
[23] Data from Digital Agenda key indicators: https://bit.ly/3qJ6pkZ

Supporting the digital skills of its population is one of the ten priorities of Spain's national digital strategy, **Digital Spain 2025**[24] (see Box 1 below). This strategy acknowledges that the lack of basic and advanced digital skills hampers the country's digital transformation. In early 2021, a specific National Digital Skills Plan[25] was adopted. To reach ambitious targets in line with those set in the Digital Decade Communication for basic digital skills and ICT specialists, the strategy for digital skills contains seven action points: (1) digital skills training, with special emphasis on population groups at risk of digital exclusion, (2) bridging the digital gender divide, (3) digitalising the education system and developing digital skills for learning, (4) digital skills training throughout working life (focusing on the working population in the private sector and unemployed people), (5) digital skills training for public sector workers, (6) digital skills training for small and medium enterprises, (7) increasing the supply of ICT specialists (via vocational training and university education).

This plan is an essential instrument in promoting digital skills development in Spain. It will be critical for the acquisition of digital skills by people in Spain in general, and by workers and ICT professionals in particular. The strategy as a whole will benefit from a total investment of €3.75 billion.

Box 1: Digital agendas in Spain

Spanish public authorities have recently launched several national strategic roadmaps, the most ambitious one in terms of digitalisation being the Spain Digital Agenda 2025 (España Agenda Digital 2025), which covers many topics to transform and digitalise the country.

Additionally, plans like the Plan España Puede to access NextGenerationEU funds allocates 40% of its budget to digitalisation measures. However, it is a specific post-COVID-19 package involving many areas, with only some budget lines and reforms for small and medium enterprises and their digitalisation.

Several months after the first draft of the NextGenerationEU funds plan, in January 2021, the government launched the SME Digitalisation Plan 2021–2025 under the Digital Agenda umbrella and supported by NextGenerationEU funds. This was great news for small and medium enterprises aiming to join the digital transformation wave.

Finally, Spain Entrepreneurial Nation is a plan to push for increasingly innovative entrepreneurs; it includes some measures to promote digitalisation (such as dealing with the public authorities online).

A brief summary of the three roadmaps:

1. **Spain Digital Agenda 2025** — Ministry of Economic Affairs and Digital Transformation:
    - Digital Spain 2025 includes nearly 50 measures grouped into ten strategic axes which, over the next five years, are intended to drive the country's digital transformation process in line with the European Union's digital strategy, through public-private collaboration and with the participation of all the country's economic and social agents.
    - More than 15 ministries and public bodies, and more than 25 economic, business and social agents participated in the preparation of this digital agenda.
    - Digital Spain 2025 envisages the implementation of a set of structural reforms during 2020–2022 that would mobilise a significant volume of public and private investment, in the region of €70 billion.
    - Public investment in the period 2020–2022 would be around €20 billion, of which approximately €15 billion would correspond to the different programmes and new community financing instruments of the NextGenerationEU Recovery Plan, which establishes that digitalisation must be one of the main axes for mobilising these resources.
    - The measures promoted in the agenda are based on ten key pillars:
        - Digital connectivity: to remove the digital divide between rural and urban areas.
        - 5G technology roll-out: to continue the development and implementation of 5G technology with the aim of having the entire radioelectric spectrum ready for 5G by 2025.
        - Digital skills: to build stronger digital capabilities for employees and the population so that 80% of people have digital skills by 2025 (half of them women).

[24] https://portal.mineco.gob.es/RecursosArticulo/mineco/ministerio/ficheros/210204_Digital_Spain_2025.pdf
[25] https://portal.mineco.gob.es/RecursosArticulo/mineco/ministerio/ficheros/210902-digital-skills-plan.pdf

- Cybersecurity capabilities: to provide 20 000 specialists in cybersecurity, artificial intelligence and data by 2025.
- Digitalisation of public administration services: to update technology infrastructure and support the digitalisation of key services such as employment, justice and social policies.
- Digitalisation of companies: to accelerate the digital transformation of companies, in particular small and medium enterprises and start-ups, with the aim of having at least one-quarter of SME business volume coming from e-commerce by 2025.
- Productive model digitalisation: to promote digital transformation projects in strategic economic sectors, such as agri-food, mobility, health, tourism, trade and energy.
- Audio-visual platform: to promote the attractiveness of the country as a reference audio-visual platform in Europe and generate business and jobs.
- Data economy: to promote artificial intelligence and big data with the aim of having at least 25% of companies using them by 2025.
- Digital rights charter: to guarantee key rights in the new digital environment, such as labour rights, consumer rights and the rights of individuals and businesses.

2. "**Plan de Recuperación Transformación y Resiliencia" (PRTR)**: The plan will guide the execution of €72 billion of European funds until 2023 and will mobilise 50% of the resources available to Spain over the next three years thanks to the NextGenerationEU instrument.
3. **Spain Entrepreneurial Nation (España Nación Emprendedora):** Spanish government programme to achieve the country's economic and social transformation through entrepreneurship. It is a strategy that advocates a change in the productive bases of the country, so that productivity is a guarantee of resilience in crisis situations.

In addition to generic digitalisation strategies, the government has launched other programmes in specific areas. The ***Educa en Digital***[26] programme to promote digital education, presented in June 2020, includes actions to foster the further digitalisation of the Spanish education system, thus promoting greater social inclusion. It has supported the completion of a high-speed connectivity programme in public schools, the provision of equipment for the most vulnerable people, and the modification of basic legislation on education, assigning a more relevant role to digitalisation in educational centres, both in the learning process and in the curriculum. In addition, amid the COVID-19 pandemic, the government launched a package of emergency actions in response to difficulties in distance teaching, making online training tools and open educational resources available to the educational community.

[26] https://www.educacionyfp.gob.es/en/prensa/actualidad/2020/06/20200616-educaendigital.html

Actions to upskill and reskill the Spanish workforce and tackle the existing shortage of ICT specialists in Spain are also ongoing. Multiple initiatives have been developed, including ones to promote the needs of small and medium enterprises, such as **Digital Talent** and **Digital Professionals**, an initiative providing training and facilitating job placements in those areas where advanced digital skills are required.

In addition to these massive investments, public-private collaboration that aims to achieve the European targets for digital skills are of fundamental importance. **AMETIC**, one of the business associations of the digital industry, is running the **Spanish Digital Skills and Jobs Coalition,**[27] encompassing more than 150 organisations (companies, public administrations, training centres and universities) active in promoting digital skills in Spain. In May 2021, the coalition launched the Spanish Digital Skills and Jobs Platform, which is connected to the European platform,[28] as the one-stop shop for information on digital skills and training materials in the Spanish context. AMETIC will also actively participate in the recently created Digital Skills Hub, a public-private institutional associative body which will guide the implementation of the Spanish recovery and resilience plan and its actions for digital skills.

During the 2020 edition of **Code Week**, 1 126 events were organised in Spain; it attracted 90 469 participants, 43% of whom were women, and 57% of the activities were organised in schools.

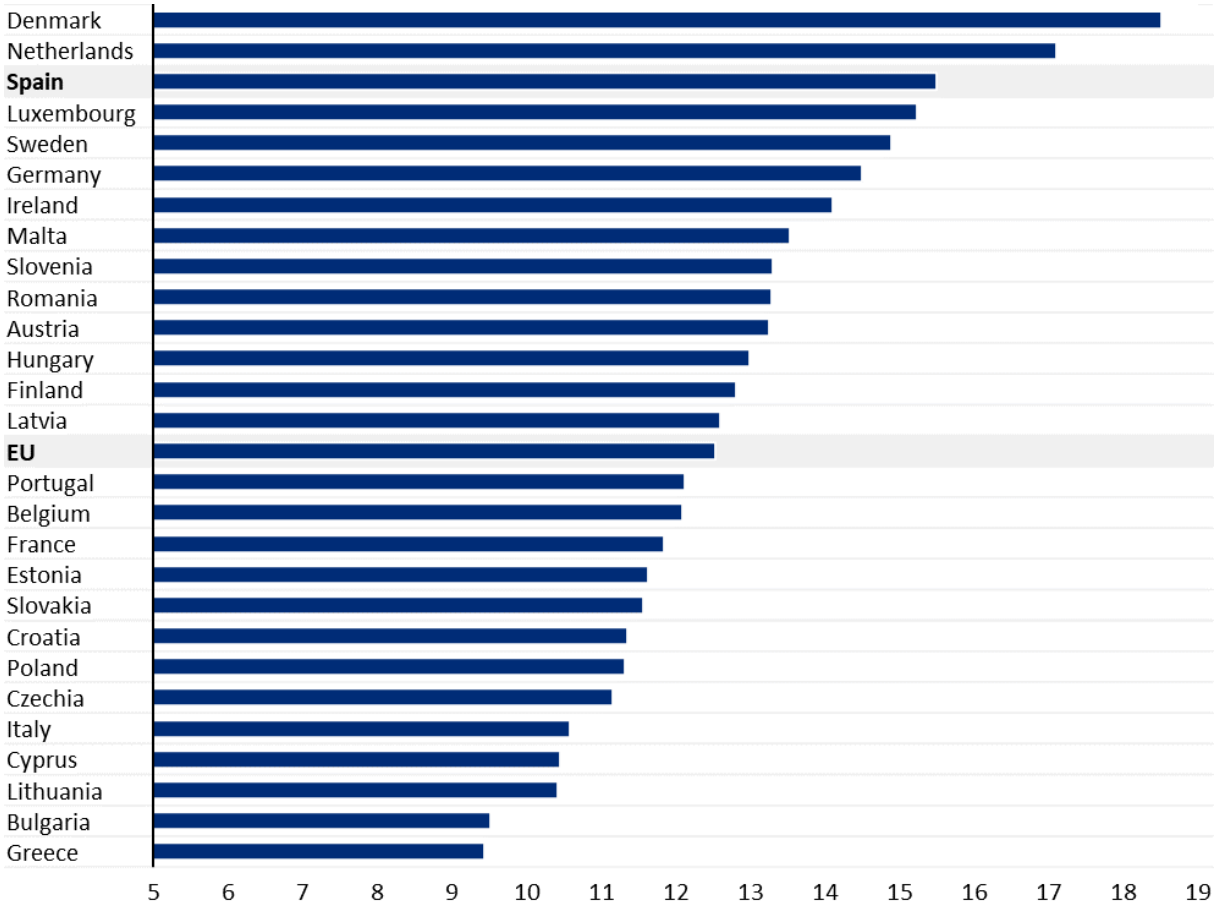
The **Talento Hacker** initiative was launched in April 2021. This free cybersecurity training initiative, which aims to promote cybersecurity learning among different types of audiences, attracted a total of 1 258 teams and 437 individual registrations (5 341 participants) in its first edition.

Overall, sound implementation of the new plan and investments will most likely bring a lasting impact for people in Spain and for the country's economy. In a more digitalised society, focusing on the groups among the population that are the least likely to use digital technologies and boosting the participation of women in the digital economy will enable everybody to make the most of Spain's digital transformation. The special attention given to the upskilling and reskilling of the labour force, in both the public and private sectors, will allow Spain to tap into the potential of the digital economy, and therefore contribute to a robust recovery.

[27] https://ametic.es/en/prensa/ametic-lanza-la-web-digital-skills-and-jobs-coalition-spain-para-mejorar-las-competencias
[28] https://digital-skills-jobs.europa.eu/en/about/national-coalitions/spain-digital-skills-and-jobs-coalition

2.3.2 Spain DESI 2021 — Connectivity

Figure 8: DESI connectivity — 2021[29]
Spain vs. European Union



Spain's already high connectivity score has improved further, moving the country up to third place in the European Union. Spain performs particularly well in very high-capacity network (VHCN) coverage, as persistent gaps between urban and rural areas are starting to close.

Thanks to extensive fibre to the premises (FTTP) deployment, fixed very high-capacity networks covered 92% of households in 2020 (3 percentage points above the previous year), which was well above the EU average (59%). The increase was sharpest in rural areas, where 64% of households were covered by fixed VHCN (12 percentage points above the previous year). Next generation access (NGA) networks covered 92% of households, also above the EU average (87%). Overall fixed broadband take-up increased by four percentage points, from 78% in 2019 to 82% in 2020. At least 100 Mbps broadband take-up increased from 53% to 65%, to almost double the EU average (34%) in 2020.

[29] Source: DESI 2021.

While Spain's 5G readiness stagnated at 30% of harmonised spectrum assigned, 5G networks covered 13% of households by June 2020, 1 percentage point below the EU average (14%). Spain published a new connectivity plan and 5G strategy[30] in December 2020 that aims to cover 100% of the population with more than 100 Mbps by 2025, in line with EU targets and focusing on rural areas. The roadmap to implement the Connectivity Toolbox[31] includes several measures with the potential to reduce costs.

The main measures include streamlining permit granting procedures, improving the single information point and increasing the transparency of physical infrastructure.

The national programme for the extension of next generation broadband networks (**PEBA-NGA),**[32] co-financed by the European Regional Development Fund (ERDF), has continued to finance the roll-out of NGA networks in rural and less populated areas. In 2020, there was an adjustment of the ERDF, releasing all the amounts not committed or in the process of being committed, to cover urgent needs derived from the COVID-19 pandemic (€94 million for the PEBA-NGA programme). The 2021 PEBA-NGA call aims to distribute €38.76 million to broadband extension projects in 12 provinces.

In 2020, Spain released a **Strategy for the promotion of 5G**[33] to improve spectrum assignment and management across pioneer bands, and to incentivise the deployment and use of 5G.

As of May 2021, the 3.4–3.8 GHz band was the only assigned 5G pioneer band in Spain (95% of the band). Spain is in the process of migrating the radars in the 3.4–3.8 GHz band and began the reframing process to allow for larger contiguous amounts of spectrum by 2021 or the beginning of 2022.[34]

After delays due to the COVID-19 pandemic, the government published the auction for the 700 MHz band[35] on 31 May 2021, which was completed on 21 July 2021. Operators are experimenting with using the 26 GHz band, but the band assignment is expected for the second half of 2022.

By Royal Decree 7/2021[36] of 27 April 2021, Spain made it possible to extend the duration of individual rights of use for radio spectrum from 20 to 40 years for new assignments. The four largest mobile operators have launched commercial 5G services and have announced plans to continue deploying 5G in the main cities. Moreover, operators are involved in several trials, some subsidised by the government, to test support for connectivity-intensive applications.

[30] https://portal.mineco.gob.es/es-es/comunicacion/Paginas/201201_np_conectividad.aspx
[31] https://digital-strategy.ec.europa.eu/en/library/connectivity-toolbox-member-states-develop-and-share-roadmaps-toolbox-implementation
[32] http://www.mincotur.gob.es/PortalAyudas/banda-ancha/Paginas/Index.aspx
[33] https://portal.mineco.gob.es/RecursosNoticia/mineco/prensa/noticias/2020/201201_np_impulso5G.pdf
[34] https://www.boe.es/buscar/doc.php?id=BOE-A-2020-8286
[35] https://www.lamoncloa.gob.es/serviciosdeprensa/notasprensa/asuntos-economicos/Paginas/2021/310521-despliegue_5g.aspx
[36] https://www.boe.es/diario_boe/txt.php?id=BOE-A-2021-6872

Box 2: Market and regulatory developments in Spain

In terms of market context, there have been several developments in the communication, media and technology (CMT) sector:

- Telefónica, Orange and Vodafone continue to dominate the Spanish broadband market, despite the decrease in their joint share of fixed broadband lines (from 85% to 82%) between the fourth quarter of 2019 and the fourth quarter of 2020. This is due to gains made by MásMóvil and Euskaltel, which held over 12% and 4% of the market in 2020, respectively. Euskaltel entered into several wholesale access agreements to provide services beyond northern Spain under its new nationwide brand, Virgin Telco. On 28 March 2021, MásMóvil announced a takeover bid for Euskaltel. In January 2021, Telefónica announced the sale of its tower division, Telxius, to American Towers Corporation (ATC). Market is becoming more competitive, which makes it more accessible to SMEs.
- In 2020, 97.1% of broadband residential lines and 95.8% of broadband business lines were retailed as part of a bundle. Fixed mobile convergent bundles (6.5 million quadruple play, 4P, and 6.2 million clients with quintuple play, 5P) account for more than 80% of the fixed broadband market. Bundles make digitalization easier since clients get and sometimes use more digital tools than if they buy just the one they know about (e. cloud storage, collaborative tools e.g. Webex, security elements…)
- On 5 May 2021, MásMóvil announced it was selling its majority stake in the FTTH network to Onivia (owned by the investment funds Macquarie, Aberdeen and Daiwa). The market share of wholesale-only operators is increasing, though it is not very representative. In June 2022 Spain adopted the new Telecommunications Act which transposes the European Electronic Communications Code and introduces relevant modifications for sector enterprises and, among them, a new classification of electronic communications services, a single information point for processing permits concerning network deployment and a notification system for the deployment or operation of submarine cables. The new act strengthens user rights and streamlines the processing of the general operators' fee.
- In 2020, Spain's national regulatory authority, Comisión Nacional de los Mercados y la Competencia (CNMC), adopted two decisions to update the economic replicability test for Telefónica's broadband products in the residential segment. The second decision led to a 5% decrease in the price of Telefónica's fibre services (NEBA local and NEBA fibre).
  On 13 May 2021, CNMC approved the resolution reducing monthly capacity-based prices for Telefónica's wholesale indirect access broadband services (NEBA) by 21.2% until the end of 2021 and by another 11.7% starting in 2022.28 On 23 April 2021, CNMC notified reduced prices for access to Telefónica's civil infrastructure wholesale offer regarding manholes and conduits (MARCo)
- In the fourth review of the wholesale local access market (market 1/2020, formerly 3a/2014) and wholesale central access market (market 3b/2014), CNMC proposed to increase the number of municipalities from 66 to 624 (corresponding to approximately 70% of the Spanish population) where Telefónica is not obliged to provide access to its fibre network.
- On 22 December 2020, CNMC opened a public consultation on the fourth review of market 4/2014 (currently market 2/2020). As Telefónica continues to have significant market power, the regulator proposes to maintain most of the current obligations.
- Due to the COVID-19 pandemic, CNMC had to delay the dates for the planned copper phase-out in 569 main distribution frame (MDF) sites with a switch-off date in 2020 by several months. Spain reported a 13% decrease in consumer complaints in 2020. The main sources of complaints were pricing and billing (36.1%), followed by contract termination (22%). The ministry asked operators to modify their zero rating offers to comply with the Court of Justice of the European Union judgment from 15 September 2020. The legislation on access to 112 services is currently under review and Advanced Mobile Location (AML) deployment is in progress. In January 2020, the Spanish Ministry of Internal Affairs deployed an emergency app (Alertcops App) with location and chat functions promoting equivalent access for end users with disabilities.

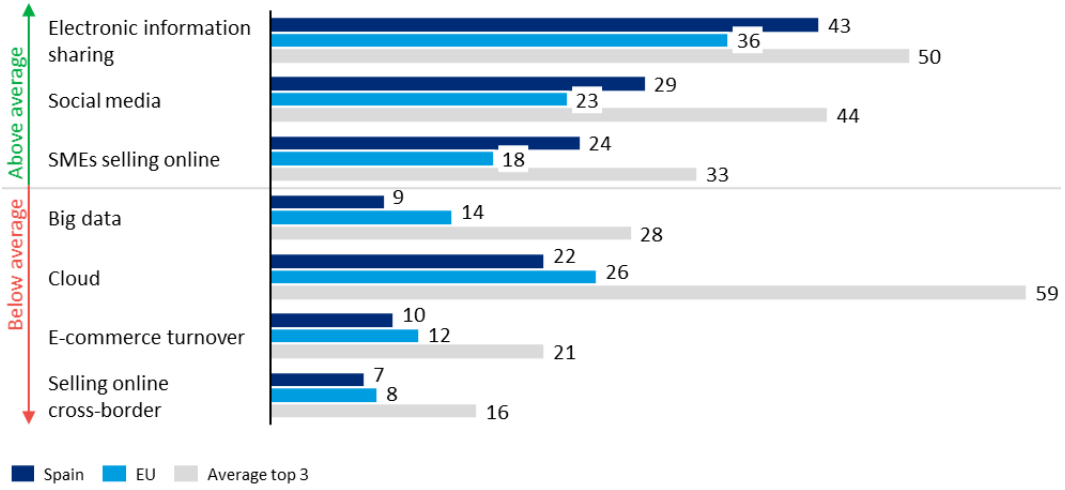
2.3.3 Spain DESI 2021 — integration of digital technology

Figure 9: DESI integration of digital technology — 2021[37]

DESI component scores - DESI Spain vs. EU

Component	Spain rank	Spain score	EU score
Overall	9th	57.4	50.7
Human capital	12th	48.3	47.1
Connectivity	3rd	62.0	50.2
Integration of digital tech	16th	38.8	37.6
Digital public services	7th	80.7	68.1

Integration of digital tech: Performance for the analysed indicators
DESI 2021, Spain vs. EU, % of enterprises



Spain ranks 16th among EU countries for the integration of digital technology in business. 62% of Spanish small and medium enterprises have at least a basic level of digital intensity, in line with the EU average (60%), 24% sell online (an increase of 5 percentage points compared with the previous year and 7 percentage points above the EU average), but only 7% sell across borders within the European Union. 10% of their turnover is generated by online sales.

43% of Spanish enterprises have an electronic information sharing system in place (the EU average is 36%) and 29% use social media to promote their products and services (against an EU average of 23%). 22% of enterprises use cloud services (against an EU average of 26%), 22% use artificial intelligence, but only 9% rely on big data analysis. 76% of enterprises have a medium or high intensity of green actions through ICT (above the EU average of 66%).

As mentioned above, the Digital Agenda 2025 was published in 2020 to promote the country's digital transformation through public-private collaboration and with the participation of all economic and social agents in the country. Under this strategy, in January 2021 Spain published a subset of the plan focused on small and medium enterprises: the SME Digitalisation Plan 2021–2025,[38] part of the Spanish National Recovery and Resilience Plan financed with NextGenerationEU funds to boost disruptive innovations and entrepreneurship in digital fields.

[37] Source: DESI 2021.
[38] https://portal.mineco.gob.es/RecursosArticulo/mineco/ministerio/ficheros/210902-digitalisation-smes-plan.pdf

It included five main action points:

1. Basic digitalisation for small and medium enterprises
2. Supporting the management of digital change
3. Advancing disruptive innovation and entrepreneurship
4. Supporting sectoral digitalisation, with a special focus on industry, tourism and trade
5. Ensuring coordination and efficiency

In addition, the strategy **Spain Entrepreneurial Nation,**[39] which is also part of the Spanish National Recovery and Resilience Plan financed with NextGenerationEU funds, aims to boost Spain's business ecosystem in all sectors.

In December 2020, Spain presented a **National Artificial Intelligence Strategy,**[40] again financed with NextGenerationEU funds, which aims to:

1. Foster scientific research, technological development and innovation in artificial intelligence
2. Promote digital skills, boost national talent and attract global talent
3. Develop data platforms and technological infrastructure supporting artificial intelligence
4. Integrate artificial intelligence into value chains to transform the economic fabric
5. Promote the use of artificial intelligence in the public administration and national strategic missions
6. Establish an ethical and regulatory framework that ensures the protection of individual and collective rights to guarantee inclusion and social welfare

In 2021, Spain published a call for projects that use artificial intelligence to solve strategic challenges in areas such as healthcare, employment, energy, environment and agri-food,[41] and has also been very active with the European High Performance Computing Joint Undertaking, promoting the participation of the main Spanish research institutions in its research and development (R&D) calls.[42] Spain has also approved the multiannual agreement for the national high performance computing centre (Barcelona Supercomputing Centre/Centro Nacional de Supercomputación — BSC-CNS) for 2020–2029, reflecting a budgetary commitment to the EuroHPC Joint Undertaking of €63 million, as well as the new Strategic Plan for the Spanish Supercomputing Network (RES) for 2021–2024.

In cybersecurity, Spain has developed a significant number of coordination measures. In 2020, it launched the **National Guide for the Notification and Management of Cyber Incidents**, designated the National Cybersecurity Institute (INCIBE) as the national coordination centre, and launched the National Cybersecurity Forum and the 017 cybersecurity helpline.

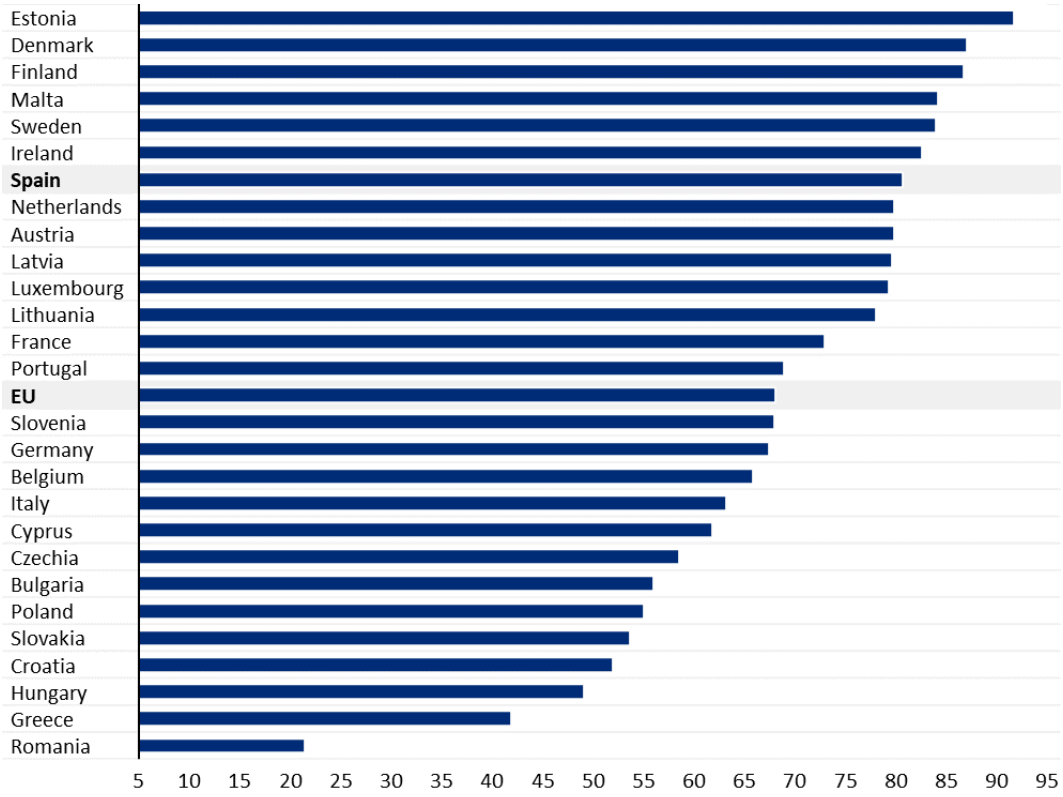
Regarding the data economy and cloud and edge computing, in 2020 Spain joined the **GAIA-X**[43] governmental advisory board and is now working with the industry to create the Spanish GAIA-X hub. This will boost the development of a data-sharing ecosystem that enables entities and individuals to control access to and reuse of their data.[44]

[39] https://www.lamoncloa.gob.es/temas/espana-nacion-emprendedora/Documents/ENE_Resumen%20ejecutivo.pdf
[40] https://portal.mineco.gob.es/RecursosArticulo/mineco/ministerio/ficheros/201202_ENIA_V1_0.pdf
[41] https://portalayudas.mineco.gob.es/misiones-ia-2021/Paginas/Index.aspx
[42] The Agencia Estatal de Investigación is awarding grants to 17 Spanish groups participating in ten projects approved under the EuroHPC 2019 calls, with a budget of about €6 million.
[43] https://gaia-x.eu/
[44] https://portal.mineco.gob.es/es-es/ministerio/participacionpublica/consultapublica/Paginas/mdi-gaia-x.aspx

Spanish businesses still have plenty of scope to take advantage of the benefits of digitalisation and new technologies, especially small, medium and microenterprises. The significant increase in the number of companies selling online reflects the fact that consumer behaviour is changing and is more demanding when it comes to new online products and services. Artificial intelligence and other emerging technologies can act as a catalyst for these companies to improve productivity and scalability.

2.3.4 Spain DESI 2021 — digital public sector

Figure 10: Integration of digital public sector[45]
DESI 2021, Spain vs. European Union



Spain ranks seventh in the European Union for digital public sector, well above the EU average. Indicators show a high level of online interaction between public authorities, individuals and businesses. 67% of Spanish online users engage actively with e-government services, compared with a 64% EU average. On the indicator for pre-filled forms (measuring the reuse of information across administrations to make life easier for individuals), Spain scored 78 points, well above the EU average of 63, even though the system in Spain works differently as it does not ask the individual for information that can be obtained through backend structures. In digital public services, Spain scores 82 for citizens (against the EU average of 75) and 94 for businesses (against 84). Spain performs very well on the open data indicator, with a score of 94% (16 percentage points above the EU average).

[45] Source: DESI 2021.

In the Digital Spain 2025 strategy, the fifth priority is to promote the digitalisation of public administrations, which was made concrete in 2020 in a specific Plan for the Digitalisation of Spain's Public Administration.[46] This plan aims to have at least 50% of all digital public services available through mobile handsets by 2025, leading to greater personalisation and a better user experience, and to increase the effectiveness, efficiency and transparency of the public sector. The plan envisages modernising the central state administration, with a specific focus on key areas such as health, justice and employment, and strengthening the digitalisation of regional and local administrations. In doing so, it aims to make the public sector a catalyst for technological innovation.

In 2020, Spain adopted a law on electronic trust services,[47] repealing the previous law on electronic signature and complementing existing regulations in the field. The law recognises that some remote identification methods could offer an equivalent level of trust to physical presence and establishes a series of obligations that trust service providers must meet.

In 2020, Spain also launched the first global standard on decentralised digital identity management, based on blockchain and distributed ledger technologies (DLT), and is cooperating with Germany on building an ecosystem of digital identities, including a cross-border pilot and an information exchange for self-sovereign identity. Findings from the pilot project could be incorporated into the upcoming toolbox to implement the European digital identity framework.

In 2021, Spain approved the Regulation on the functioning and operation of the public sector by electronic means,[48] with the aim of improving administrative efficiency, increasing transparency and participation, guaranteeing user-friendly digital services, and improving legal certainty.

Spain also created the **Data Office Division**[49] in 2020 to facilitate the sharing and reuse of public data by people in Spain and by enterprises and launched the initiative Setting up European Blockchain Service Infrastructure (EBSI) compliant nodes and case uses in Spain (as part of the European blockchain strategy to connect legacy/national systems to the EBSI network). Spain is at the forefront in e-government and digital public services within the European Union and continues to update its services and infrastructure to respond to the rapid evolution of technology and peoples' needs. Interoperability at national, regional and local levels is now key to ensuring a smooth digital transition between administrations to achieve synergies and avoid overlaps.

[46] https://portal.mineco.gob.es/RecursosArticulo/mineco/ministerio/ficheros/210902-digitalisation-of-public-admin-plan.pdf
[47] https://www.boe.es/eli/es/l/2020/11/11/6
[48] https://www.boe.es/eli/es/rd/2021/03/30/203
[49] https://www.boe.es/eli/es/o/2020/07/31/etd803

2.3.5 DiGiX Spain — multidimensional index of digitization

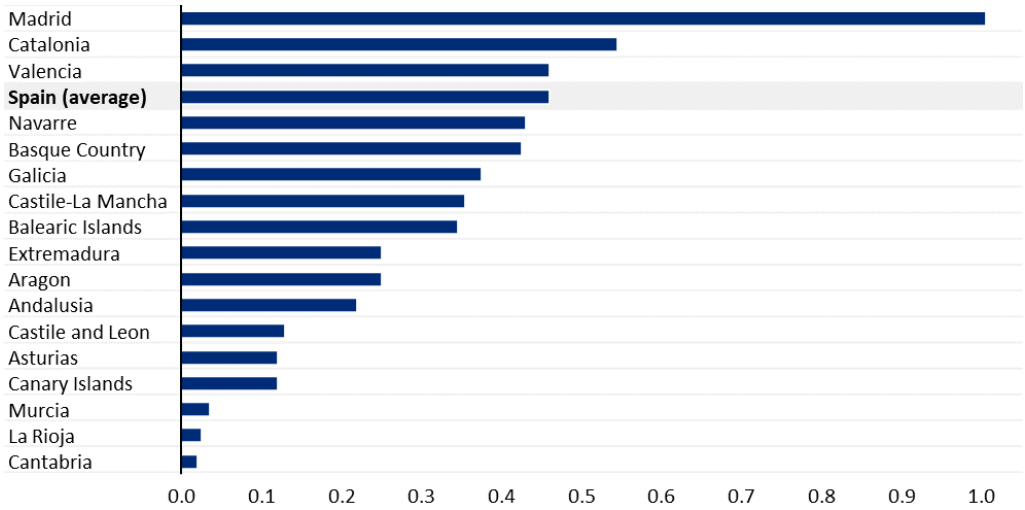
DiGiX is a digitalisation index built by BBVA based on more than 20 variables. It is computed for more than 99 countries, as well as for the 17 Spanish autonomous communities, enabling us to see the regional differences in SME digitalisation.

DiGiX 2020's main conclusions are in line with the Digital Economy and Society Index: the 17 autonomous communities already have almost full coverage in terms of digital infrastructure able to take advantage of technological advances in a productive manner, enabling them to go beyond simple internet access. However, the adoption of new information and communication technology by companies is where there are more opportunities to progress; specifically, DiGiX points out that there is room for improvement in the use of cloud computing and big data, in line with the Digital Economy and Society Index.

Regarding the differences between regions, three autonomous communities are above the level of digitalisation that characterises Spain as a whole: Madrid, Catalonia and Valencia. This trend has been seen over the last three years, with Madrid standing out for having on average doubled the level of digitalisation of the rest of Spain in many of the variables.

In terms of adoption by consumers (this indicator includes all types of consumers, and the variable includes internet use, type of connection and digital skills), Madrid, Catalonia, Valencia, Navarre and the Basque Country are the five autonomous communities where the adoption rate exceeds that of the average Spanish consumer. Murcia, La Rioja, Extremadura and Andalusia are usually in the lower rankings.

Figure 11: DiGiX — Company adoption[50] of digital investments[51]



Another interesting analysis is the level of digitalisation within regions, which is again mixed: for example, Málaga belongs to Andalusia and is renowned for its digital investments, but the aggregation of other sub-regions and provinces lowers the Andalusian average despite Málaga being a new startup hub.

It can be concluded that specific regions have specific challenges, and that a correlation still exists between digitalised regions and those that make digital investments, as can be seen in the graph.

[50] Company adoption: digital investments that have the potential to generate productivity improvements measuring communities in a scale from 0 (worst) to 10 (best).
[51] Source: DiGiX, BBVA report.

2.3.6 ICDS index — Digitalisation across sectors

The ICDS suggests that the level of digitalisation varies from one sector to another. The ICDS analysis is performed across 12 sectors of activity composed of three pillars:[52]

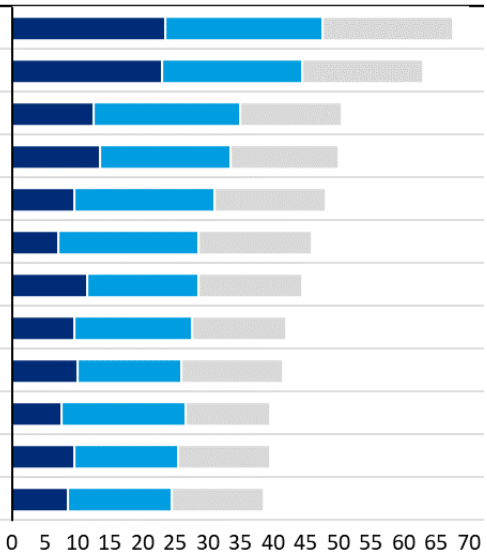
- Resources: Measures the degree of digitalisation of production assets (physical and human capital)
- Interactions: Measures the intensity with which businesses use new technologies in value chain interactions
- Technologies: Measures the level of adoption and popularity of 12 specific digital technologies (including cloud computing, artificial intelligence and big data)

The most digitalised sectors are the ICT sector with a score of 67, the professional, scientific and technical activities sector with a score of 63, and the real estate services and financial services sectors, which both have a score of 50. These are all sectors where digitalisation is key hence their high scores are expected. However, Spain is lagging behind the top EU countries such as Finland, whose ICT sector has a score of 82 (15 points more than Spain).

The lowest scoring sectors are the agri-food industry with 38, and the basic manufacturing and construction industries, which both have a score of 40. Looking at it in terms of resources, the agri-food, hospitality and manufacturing industries have a greater lack of human capital, which has already been identified as a key reason for lower levels of digitalisation among small and medium enterprises in Spain.

Figure 12: ICDS — Sector digitalisation ranking (0–100)[53]

Position	2020 Ranking	ICDS
1	ICT sector	67
2	Professional, scientific and technical activites	63
3	Real estate services	50
4	Finance and insurance	50
5	Trade	48
6	Accommodation services	46
7	Advanced manufacturing	44
8	Transportation and storage	42
9	Primary sector	41
10	Construction	40
11	Basic manufacturing	40
12	Agri-food industry	38



Hospitality, manufacturing and agri-food industries are ones with a higher lack of human capital in Spain

Resources
Measures the degree of digitisation of production assets (physical and human capital)

Interactions
Measures the intensity with which businesses use new technologies in value chain interactions

Technologies
Measures the level of adoption and popularity of 12 specific digital technologies (including cloud computing, artificial intelligence and big data)

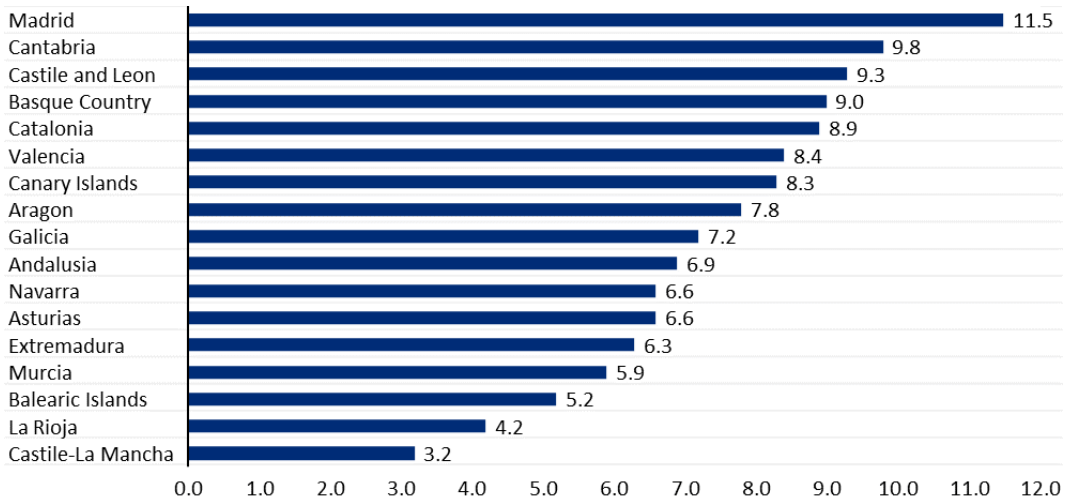
[52] CaixaBank research.
[53] Source: CaixaBank Research.

2.3.7 Other indexes on the digitalisation of companies

Regarding the use of artificial intelligence, Madrid, Cantabria, the Basque Country and Catalonia have seen the greatest development, according to the National Statistics Institute (INE, Survey on the use of ICT in Spanish companies 2020–2021[54]).

Despite this, the use of artificial intelligence in industry is still low, with no more than 8.3% of companies using it in most cases. This means there is still a lot of room for improvement in the margin for growth of small and medium enterprises in the use of artificial intelligence. It should be noted that most companies using this technology are large corporations.

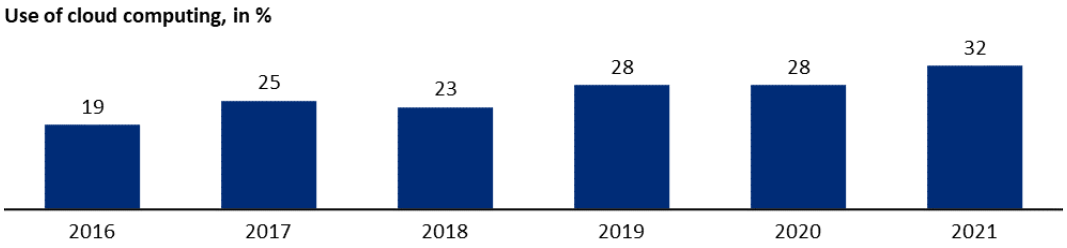
Figure 13: Use of artificial intelligence per Spanish region[55]



According to INE, the main reason Spanish companies are not using artificial intelligence is a lack of knowledge, followed by the perception of high implementation costs, low data availability and incompatible software. This last point highlights that some businesses may still be using old software versions. Only 0.8% of Spanish companies believe that artificial intelligence is not useful for them.

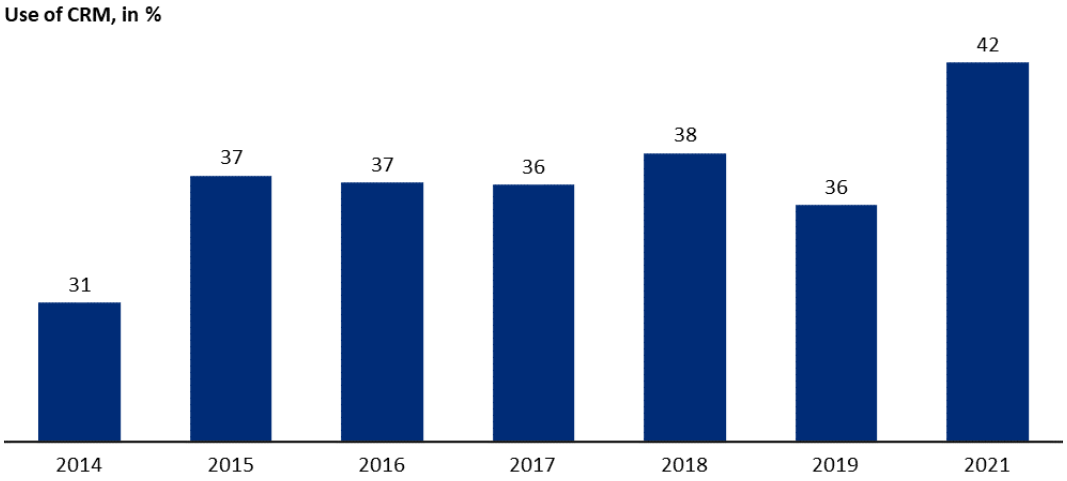
[54] https://www.ine.es/prensa/tic_e_2020_2021.pdf
[55] Source: Spanish National Observatory for Technology and Society (ONTSI).

Figure 14: Use of cloud computing in Spain[56]
% in scope of companies with internet access, 2021



According to the Spanish National Observatory for Technology and Society (ONTSI), an institution under the Ministry of Economic Affairs and Digital Transformation, 32% of companies in Spain reported having used cloud services in 2021, 4% more than the previous year. The propensity to use cloud computing varies by company size and sector. Only 29% of small Spanish companies use cloud services, compared to 48% of medium-sized companies and 68% of large companies.

Figure 15: Use of customer relationship management in Spain[57]
% in scope of companies with internet access, 2021



Regarding the use of customer relationship management, Figure 16 shows the positive evolution of the adoption of this type of software since 2014. It highlights strong growth of 6% in 2021 compared to the previous year, with these services being implemented in 42% of companies.

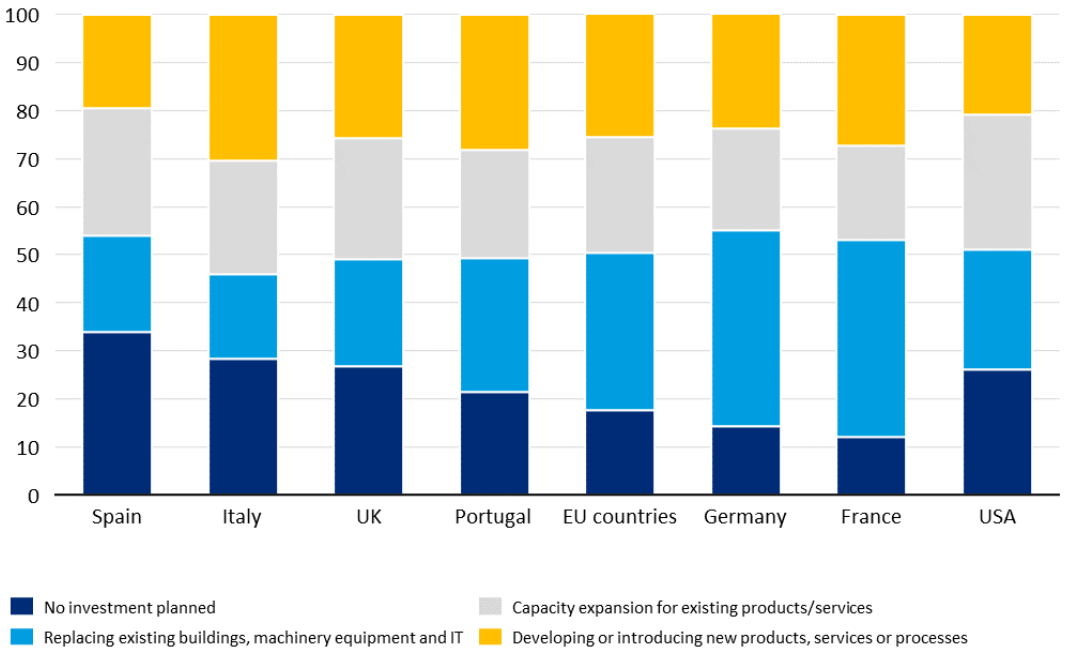
[56] Source: ONTSI.
[57] Source: ONTSI Note: According to ONTSI 2020 data not available due to Covid-19.

2.4. Demand for digitalisation

The EIB investment survey shows that 34% of Spanish small and medium enterprises are not planning to invest in digital solutions over the next three years, which is almost double the percentage for EU countries (18%). Compared to the other countries in the survey, Spain has a much higher proportion of enterprises not looking to invest. Spanish firms are 1.2 times more likely to have no investment planned for the next three years compared to Italy, the country with the next largest "no investment planned" response. The survey was performed in 2020, before the NextGenerationEU funds and plans were widely known. The survey for the following years might be impacted by this recovery plan and the willingness of companies to get public funds to make investments in digitalisation programmes.

Specifically, micro and small Spanish enterprises are the ones with a greater "no investment planned" response — 41% of microenterprises and 42% of small enterprises — which is almost double the EU average of 30% and 21%, respectively. Micro and small firms in Spain are 2.0 times less likely to invest than medium firms. However, across all company size categories the percentage of Spanish enterprises with "no investment planned" is almost double that of EU enterprises.

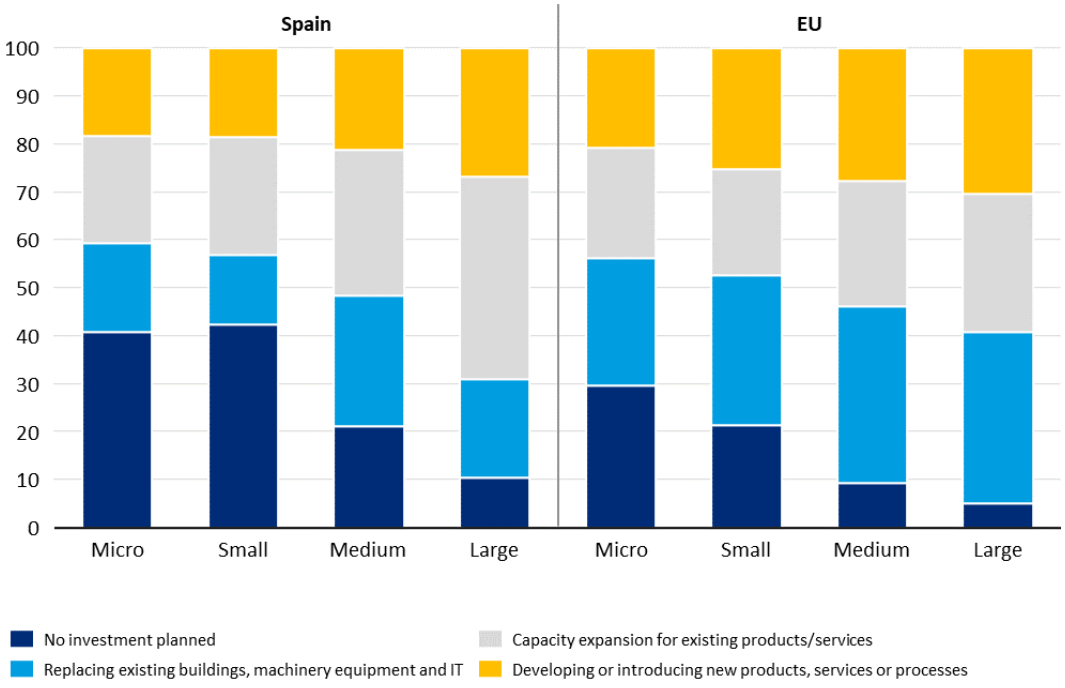
Figure 16: Investment priorities for the next three years by country[58] 2020, in %



Micro and small Spanish enterprises have double the EU average of segments that plan no investment or just plan to replace existing buildings, machinery equipment and IT. Small and medium enterprises are not investing in developing or introducing new products, services or processes or in capacity expansion for existing products or services.

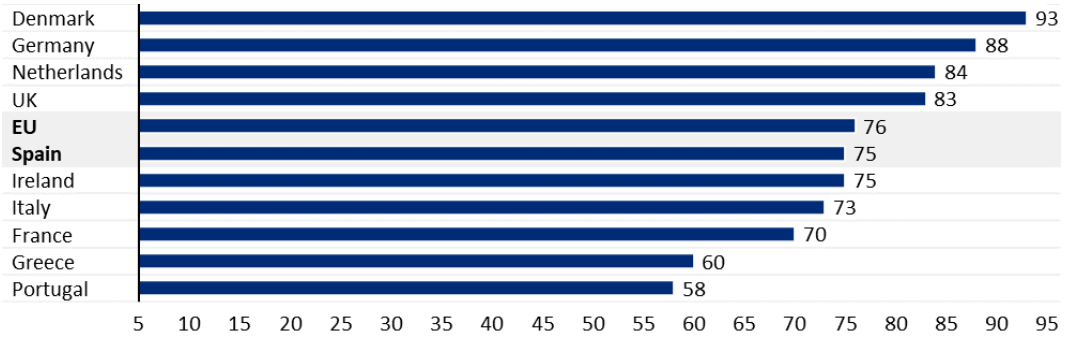
[58] Source: EIB Investment Survey spring/summer 2020, Oliver Wyman analysis.

Figure 17: Investment priorities for the next three years by firm size[59]
2020, in %



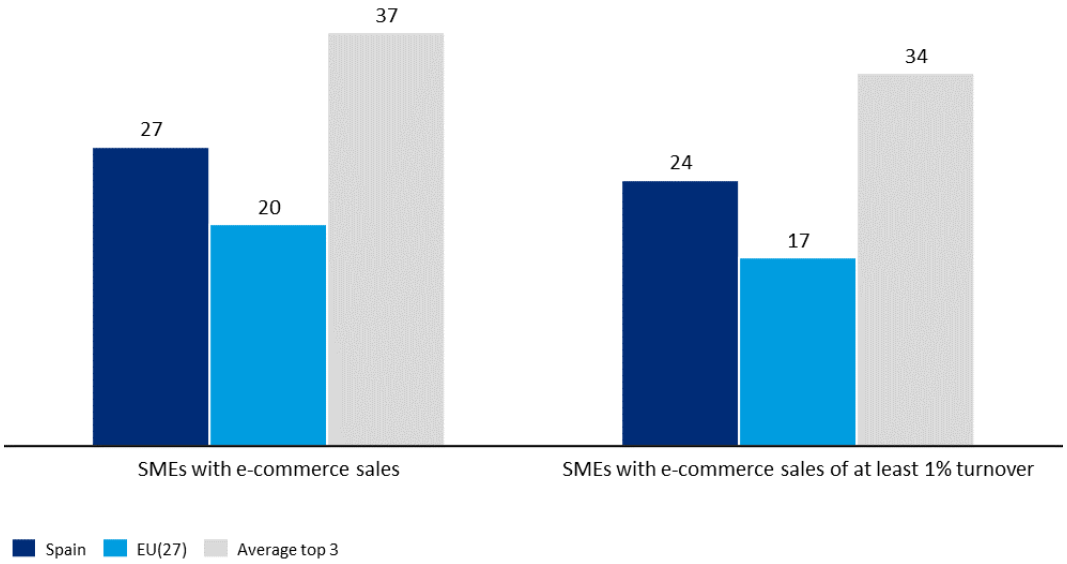
Although Spanish companies show great performance on website availability, just 27% of small and medium enterprises sell via the internet. 75% of them have websites, which is very similar to the corresponding statistic of 76% for the European Union. However, when the percentage of small and medium enterprises with e-commerce sales is measured, the average for the top three countries (37%) is far higher than Spain (27%). This inequality is similarly seen in the figures for those with e-commerce sales of at least 1% turnover — for Spain it is 24% whereas the average percentage for the top three countries is 34%.

Figure 18: SMEs with websites[60]
2020, % of total SMEs



[59] Source: EIB Investment Survey spring/summer 2020, Oliver Wyman analysis.
[60] Source: Eurostat.

Figure 19: SMEs with e-commerce sales[61]
2020, in %



Analysing the components of the Digital Economy and Society Index shows that although Spain is almost equivalent to the EU average, there is a lack of digital human capital (ICT specialists and graduates) in small and medium enterprises that might impact the demand for digitalisation. This is likely due to the low percentage (compared to the average for the top three countries) of the Spanish population with at least basic digital or software skills, as mentioned earlier in the overview of Spain's DESI rank. This translates into low levels of ICT specialists (3.8% of total employment) and ICT graduates (3.9% of total graduates). Eurostat defines **ICT specialists** as "workers who have the ability to develop, operate and maintain ICT systems, and for whom ICT constitutes the main part of their job."[62]

In addition, Spanish small and medium enterprises invest little in developing human capital. For instance, the proportion of them offering training in ICT is 71% lower than for large companies. Spanish enterprises of all sizes offer significantly less ICT training than the average for the top three countries.[63] 19% of Spanish small and medium enterprises offer ICT training, whereas the average in the top three countries is 33%. In fact, the proportion of Spanish small and medium enterprises offering ICT training fell by 5% between 2019 and 2020 after four years of relative stability; this could be partially due to the COVID-19 crisis, since they focused on investments for immediate survival, pausing training and other longer-term investments. Another potential reason for the lack of investment in ICT training by these companies is the low average number of employees, as previously mentioned. Less employees could potentially lead to less time to invest in ICT training as more time is taken up on meeting the basic needs of the enterprise.

[61] Source: Eurostat.
[62] Eurostat.
[63] The top three countries vary per statistic/variable, referring to the three countries with the higher/better statistic in each case.

Figure 20: Proportion of firms offering ICT training[64]
2020, in %

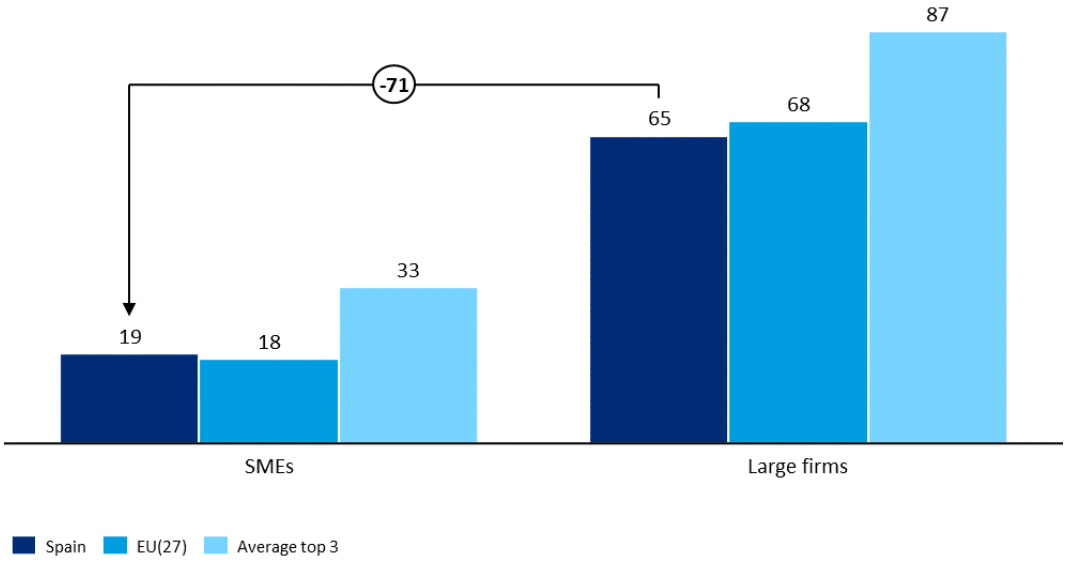
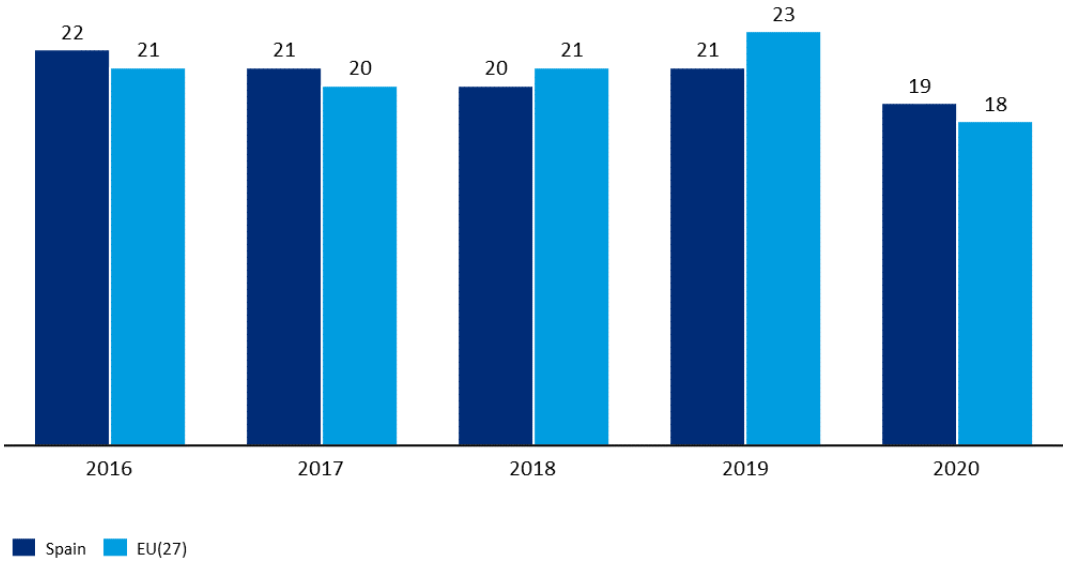


Figure 21: Proportion of SMEs offering ICT training[65]
2016–2020, in %



[64] Source: Eurostat.
[65] Source: Eurostat.

2.5. Supply of tools for digitalisation

A wide variety of digital services are available for Spanish small and medium enterprises.

Figure 22: Available digital solutions for Spanish SMEs[66]

Industries	Education	Tourism and culture	Communication and media	Manufacturing (e.g. car manufacturers)	Restaurants	Spanish players	International companies offering services
Sales and marketing website and app	✓	✓	✓	✓	✓	Scalefast	SAP Salesforce Marketo Xactly
E-commerce Payment platform		✓	✓	✓	✓	Typeform	Shopify
Finance accounting e-billing	✓	✓	✓	✓	✓	Singular cover Belvo	Microsoft Sage Intuit
Human Resources CRM	✓	✓	✓	✓	✓	Onna Payflow	People ADP
Digital working Cloud, digital workspace services	✓		✓			Counter Craft	Zoom Teams
Cibersecurity	✓	✓	✓	✓	✓	RK	Nova3 Secure&IT
Supply chain management and inventory			✓	✓	✓	Paack	USA Fleet solutions Sage
Distribution processes			✓	✓	✓	Ontruck	Sage Netsuite
Product development and manufacturing			✓	✓	✓	Kenmei	Aha! Monday.com

Standard solutions Other sectorial solutions

There is a wide range of different digital products and services available for small and medium enterprises in Spain. This can be seen not only in sectors such as communication and media, but also in more traditional sectors such as manufacturing, education and catering, which have significant weight in the Spanish economy, representing around 15% of GDP.

The companies that offer these services are not only international companies; many local small and medium enterprises are also dedicated to this sector (it is difficult to know the market share of local providers, but estimates by different business associations such as DigitalEs and AMETIC or specialised press like ComputerWorld are in the range of 10–50% depending on the subsector or place in the value chain). However, we note that the scalability and the difficulty of adapting highly commercial digital products to the current platforms of small and medium enterprises comes at a very high cost both in terms of professional knowledge and financially.

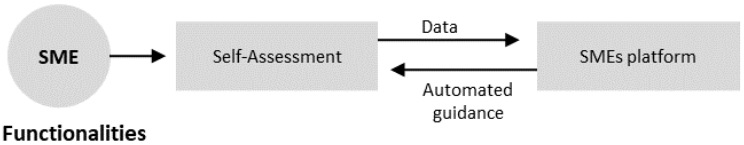
[66] Source: Oliver Wyman Analysis.

Once again, we observe how, for example, the necessary tools for e-commerce are developed at the level of online and delivery platforms (such as Glovo and Uber). However, as mentioned at the beginning, only 27% of companies that sell retail products do so online, a further sign that there is significant room for improvement in the SME environment in Spain. EU aid applied with the recommendations mentioned in section 4 of this document would improve this link between supply and demand, offering better solutions to a sector with a lot of weight in the economy, such as small and medium enterprises.

Figure 23: Matching tool[67]

Guiding SMEs

Platform provides SMEs with info repository and automated guidance based on self-assessment results

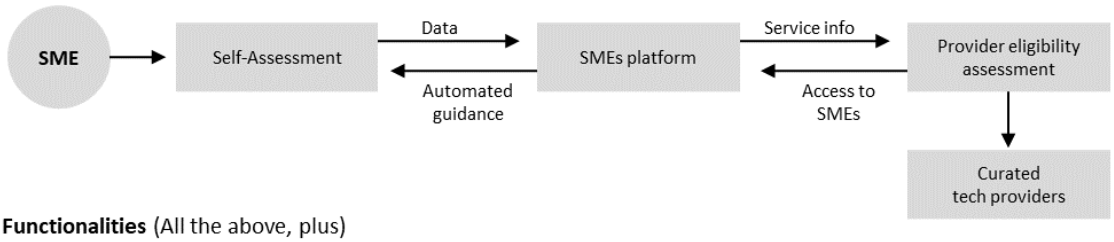


Functionalities

- **Information repository:** Central repository of info on digitalisation topics (e.g. web, cyber)
- **Self-assessment tool:** Online tool for digital self-assessment
- **Automated guidance:** Automated guidance provided on the back of the self-assessment results
- **Tailored guidance:** Consultancy to transform business using digital technologies (for complex needs)
- **"Shopfront" to existing digitalisation resources:** Link to external organisations offering relevant products/solutions (not curated) [i.e. based on https://acelerapyme.gob.es/ web-page]

Connecting SMEs to curated tech marketplace

Platform provides access to curated list of tech solutions and services based on self-assessment

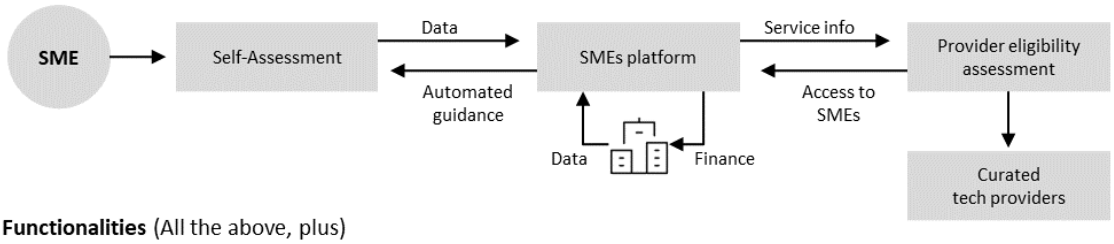


Functionalities (All the above, plus)

- **Curated list of tech solutions:** Long list of pre-approved, proven, robust digital solutions that meet SMEs' needs
- **Curated list of digital project managers:** Long list of pre-approved skilled digital project managers from a ready pool to support the implementation of digital solutions

Facilitating matching and financing

Platform provides access to curated list of tech solutions and streamlined financing



Functionalities (All the above, plus)

- **Payment platform:** End-to-end payment platform to ensure control over effective commercial transactions and financial flows
- **Private financing:** Access to bank financing for non-covered services (possibility to incetivise competitive rates via partial/full state guarantees)

[67] Source: UK government.

We have identified three key challenges that prevent smaller tech vendors from being as effective as possible in providing innovative solutions to small and medium enterprises:

- **Tailoring solutions to traditional small and medium enterprises**
  Smaller players do not have the scale or typically the experience to address the variety of needs and problems traditional small and medium enterprises face. Their offering is therefore more specific and needs re-engineering if new features are required or requested by clients. This could also lead to significant fragmentation in the market.
- **Executing several projects**
  Smaller tech vendors can suffer from execution-related constraints, such as not having the capacity/resources to dedicate to multiple projects simultaneously. In addition, when compared to larger players, smaller vendors typically lag behind in terms of time needed to complete a project or in terms of ancillary services that could be offered during the implementation period (such as sharing benchmarks/learnings on what is happening in other sectors/geographies).
- **Scaling up financially**
  Smaller suppliers have less solid financial positions/resources to scale up. This increases the difficulty of quickly and exhaustively meeting their clients' needs and driving execution as fast as possible.

To summarise, the problems that have been observed on the supply side are related to market problems; however, in many instances products are prepared for and focused on solutions for large corporations. For this reason, it is essential that companies offering technological solutions have highly adaptable products and take into account the current digital infrastructure available to small and medium enterprises in Spain. The systems they use are not usually complex models so it is easy to adapt; however, this adaptation is often a challenge at the financial level. Therefore, companies that offer services should try to create products with payment formats that adapt to the cash flows of small and medium enterprises, making payments in instalments in order to minimise the financial impact of these operations.

2.6. Market matching

Market matching enables the demand and supply sides to engage with each other and mutually help each other. The complexity of the ecosystem makes it difficult for small and medium enterprises to navigate different options and for other digital players to scale up their expertise. Market matching can be split into four categories (ranging from private sector first to public sector last): digitalisation companies, big corporates, business associations and government solutions. Below are descriptions of each of the categories and some examples.

Digital companies have their own interest in digitalising societies so that they can directly sell and penetrate the market with their products. The figure below aims to describe how different market players push to have a digital SME environment from different perspectives (from left to right, private sector to public sector). Some companies do not sell technology but will not be able to do so if the environment is not sufficiently developed, as would be the case for Telefónica; if companies are not digital, no internet will be sold. Next come business associations, which have a clear interest in fostering ecosystems, and lastly government initiatives such as red.es or Acelera Pyme.

Figure 24: Market matching categories and examples[68]

Private sector → **Public sector**

Digitalisation companies

Private companies that offer digital solutions to SMEs and dedicate time to raising awareness about digitalisation matters (such as Sage)

Sage: Platform where customers can complement the solutions they already have with other local and vertical customised applications to optimise their activity and personalise their experience to help SMEs adapt their business to the current circumstances

Big corporates

Big corporates such as telcos or banks that offer packages of digital solutions to SMEs (such as Movistar, Vodafone, BBVA and Santander)

Movistar Marketplace Empresas: Marketplace offering Movistar digital products and services in the areas of productivity, digital marketing, security, Big data, IoT and cloud. These aim to help companies in their digital transformation.

Business associations

Business associations focused on SMEs or on digital matters that foster public forums and workshops to raise awareness and facilitate knowledge exchange (such as CEPYME, AMETIC and Digital.es)

AMETIC: Association that fosters the development of an ecosystem which helps companies and individuals digitalise and promotes a legislative framework which enables the development and use of digital technologies

Government solutions

Government initiatives created to assist SMEs in their digitalisation

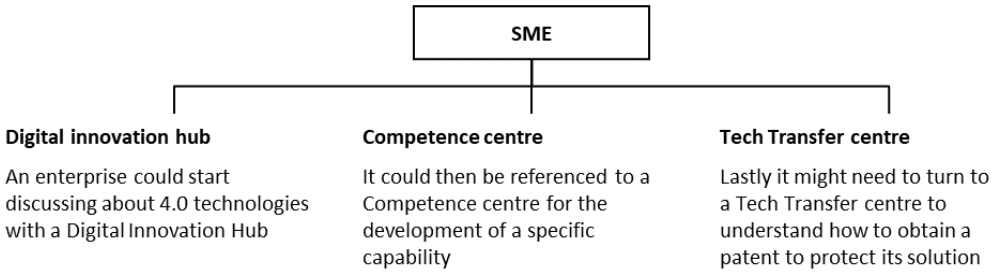
Acelera Pyme: Platform with a double objective. First, it acts as an aggregator of all the information regarding the government measures. Second, it acts as a matchmaker of resources and solutions by its public and private collaborators to help digitalise SMEs and the self-employed.

The different stakeholders in the digitalisation process and the range of options increase the complexity of this process. Hence, it is difficult for small and medium enterprises to not only understand the technology that they aim to use but also to understand the ecosystem in which they are involved. Complexity will be mentioned in greater detail in the recommendations.

The following figure looks at how small and medium enterprises have three main sources of knowledge in the market, the first being digital innovation hubs, where several members interact by sharing know-how. The second more focus-oriented source would be competence centres, where the goal is to push limits on a specific topic. Lastly, there are tech transfer centres, focusing on bureaucratic issues such as understanding how to get a patent.

[68] Source: Oliver Wyman Analysis.

Figure 25: Complexity of market matching[69]
Illustrative example of market complexity



At a national level, the matching is mostly done through clusters, associations and digital innovation hubs, with districts playing an important role at regional or local level too. Here is an example of a market matching solution promoted by business associations or the Ministry of Economic Affairs and Digital Transformation.

Acelera Pyme: This initiative promotes the construction of a reference ecosystem for the digital transformation of small and medium enterprises in Spain. It was developed by red.es, an entity under the State Secretariat for Digitalisation and Artificial Intelligence, and is included in the Digitalisation Plan for SMEs 2021–2025, with a budget of more than €26 million.

Acelera Pyme has the following goals:

- Boosting digital transformation for small and medium enterprises through advisory services and training
- Providing a platform to generate a national digital community and digital transformation ecosystems, focusing on stakeholders unifying capabilities
- Providing high value services to enhance SME digitalisation
- Promoting other strategic goals of the government such as entrepreneurship, sustainability and the development of strategic sectors
- Providing the Acelera Pyme platform, the office network platform (+30 across Spain) and support and advisory services

[69] Source: Oliver Wyman Analysis.

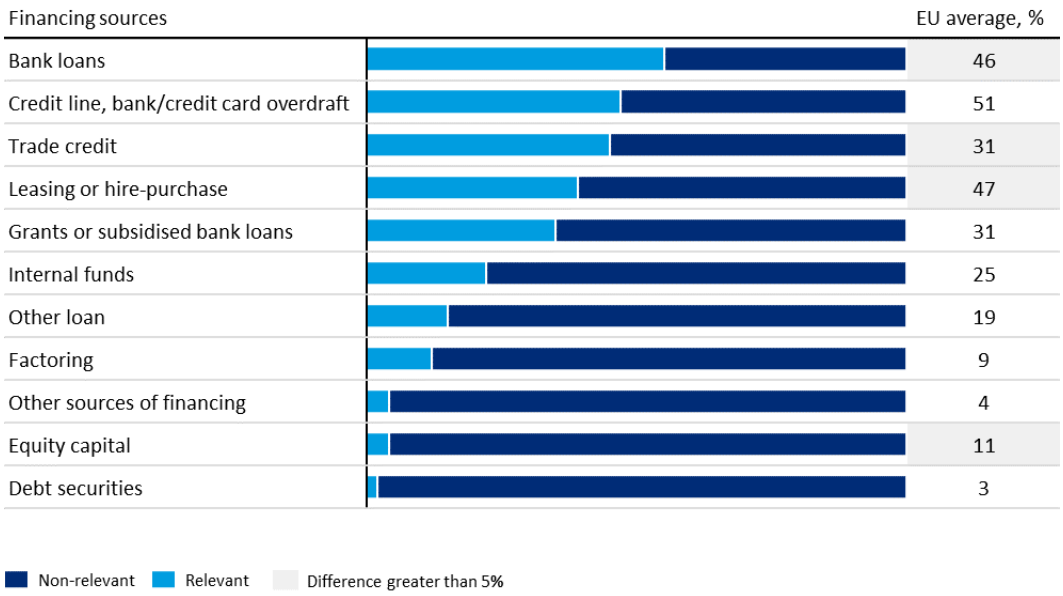
2.7. SMEs Financing

"The survey on the access to finance of enterprises (SAFE) provides information on the latest developments in the financial situation of enterprises, and documents trends in the need for and availability of external financing. The survey results are broken down by firm size, branch of economic activity, country, firm age, financial autonomy and ownership."[70] For the following chart, the responses are in answer to the question: "Are the following sources of financing relevant to your enterprise, that is, have you used them in the past or considered using them in the future?"[71]

Spanish small and medium enterprises typically rely on banks as their preferred source of income. Their financing sources were in line with EU averages in 2019, except for equity, leasing, trade credits and bank loans. Bank loans were reported as the most relevant financing source with 55% of companies reporting them as "relevant," compared to an average of 46% across the European Union. Given the low number of employees, their financial behaviour seems to resemble that of an individual rather than a corporate.

In general, their low use of equity capital could be a matter of culture and mindset, as owners are not willing to introduce outside investors in their firm and do not want to lose power and control. The management abilities of the Spanish enterprise ecosystem lag behind those of other European countries given their lack of resources driven by their light structure (as stated above, the average number of SME employees in Spain is 3.1, fewer than the EU average of 3.9, and fewer than larger comparable countries such as Germany and the United Kingdom, with 7.6 and 5.1 employees on average, respectively). In addition, as many work individually, they act as they do in their personal life (the majority of people tend to use loans to fund their major personal acquisitions such as a flat or car). For that reason, the same behaviour can be observed when funding their companies through loans. The use of other types of banking credit such as factoring, confirming or promissory notes can also be observed.

Figure 26: Relevant financing sources for SMEs[72] 2019, in %



[70] Created and published by the European Central Bank (ECB).
[71] SAFE survey.
[72] Survey answer options: (1) Relevant; (2) Not relevant; (3) N/A Source: SAFE survey, Oliver Wyman analysis.

Interest rates, lack of collateral and paperwork are the biggest problems preventing small and medium enterprises from accessing financing in Spain, as reported in the SAFE survey. High levels of bureaucratic paperwork, making the process of accessing financing overly complicated and time consuming, are suggested as a limiting factor, with 12% of Spanish small and medium enterprises finding it the most important factor compared to 8% of those in the European Union.

20% of Spanish firms state that the most limiting factors to accessing finance are high interest rates or prices and 19% of firms state that it is the lack of sufficient collateral. This is especially true for those who are self-employed. On the other hand, some firms state that there is more difficulty in accessing bank loans:

- 36% of Spanish firms state that the cost of financing (other than interest rates, such as charges, fees and commissions) has increased.
- 21% of Spanish firms state that interest rates have increased.
- 18% of Spanish firms state that the size of the loans or credit lines available has increased.
- 13% of Spanish firms state that collateral requirements have increased.

Self-employed professionals usually pledge their own properties as collateral. Hence, when applying for new loans, their loan-to-asset ratios are higher as they are more exposed to default.

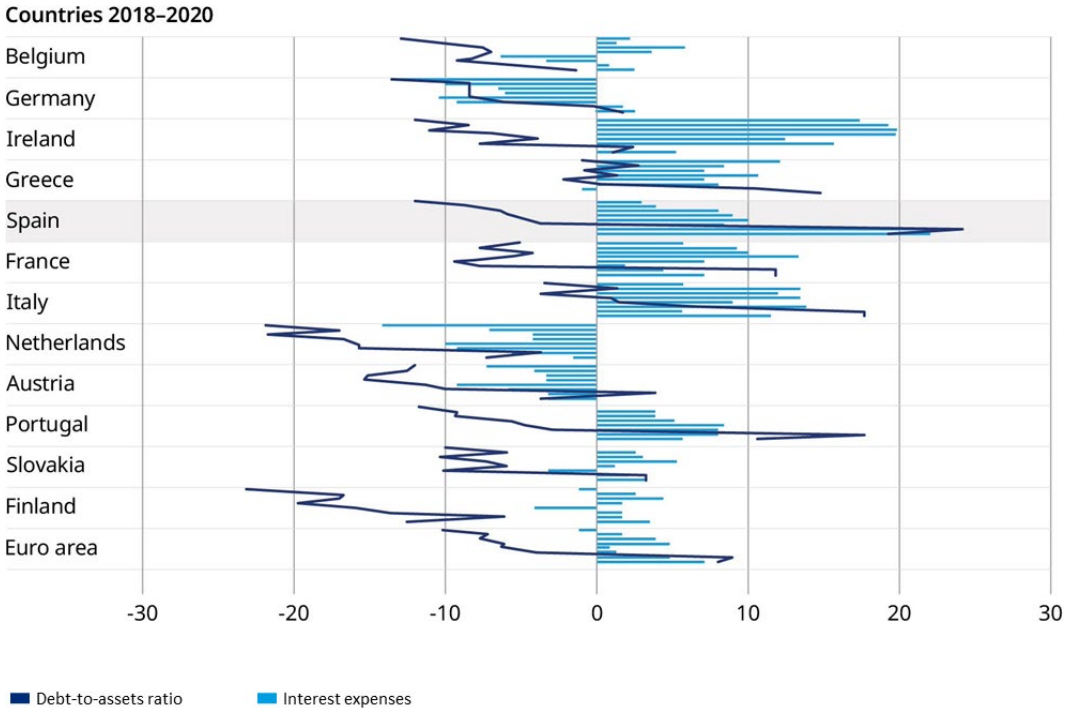
Figure 27: Constrains when evaluating a loan[73]
What do you see as the most important limiting factor to get financing?

Issue	Spain	EU (28)
Interest rates or price too high	20%	12%
Insufficient collateral or guarantee	19%	12%
too much paperwork is involved	12%	8%
Other	9%	11%
Financing not available at all	4%	1%
Reduced control over the enterprise	1%	2%
There are no obstacles	31%	45%
N/A	4%	5%

Interest expenses for SME loans have increased in Spain, greatly impacting debt-to-asset ratios. Spanish and Irish small and medium enterprises were the ones reporting the highest increase in interest expenses in the October 2020 to March 2021 edition of the SAFE survey. Debt-to-asset ratios have spiked in most European countries; however, the figures for Spain went far beyond average, along with Italy and Portugal. The future sustainability and competitiveness of Spanish firms could be affected by such an increase in the level of indebtedness, as the higher the level of indebtedness, the fewer resources can be allocated to investments for the future.

[73] Survey answer options: (1) Relevant, (2) Not relevant, (3) N/A Source: SAFE survey, Oliver Wyman analysis.

Figure 28: Change in debt-to-total assets ratio and interest expenses of SMEs across euro area countries[74]



We have identified some focus areas that need to be carefully managed to ensure the liquidity in the system is used in the best possible way:

From the finance perspective:

1. **Nature of investment and collateral**
   Digitalisation investments differ from more traditional ones as they typically do not have a tangible asset to offer as collateral (such as machinery equipment or real estate). Therefore, banks often process these investments as intangible investments and ask for specific collateral (such as a personal guarantee from the entrepreneur), making it more difficult to match demand and supply.
2. **Banks' digital due diligence capabilities**
   While the credit granting process is the same as for "traditional" investments, banks need dedicated due diligence capabilities to assess and evaluate the digital transformation investments they are presented with. The difficulty in identifying the expected benefits of such investments on the corporates' creditworthiness can be a significant challenge to overcome. Banks may find it challenging to assess and evaluate corporates operating in new sectors and markets for which little information is available.

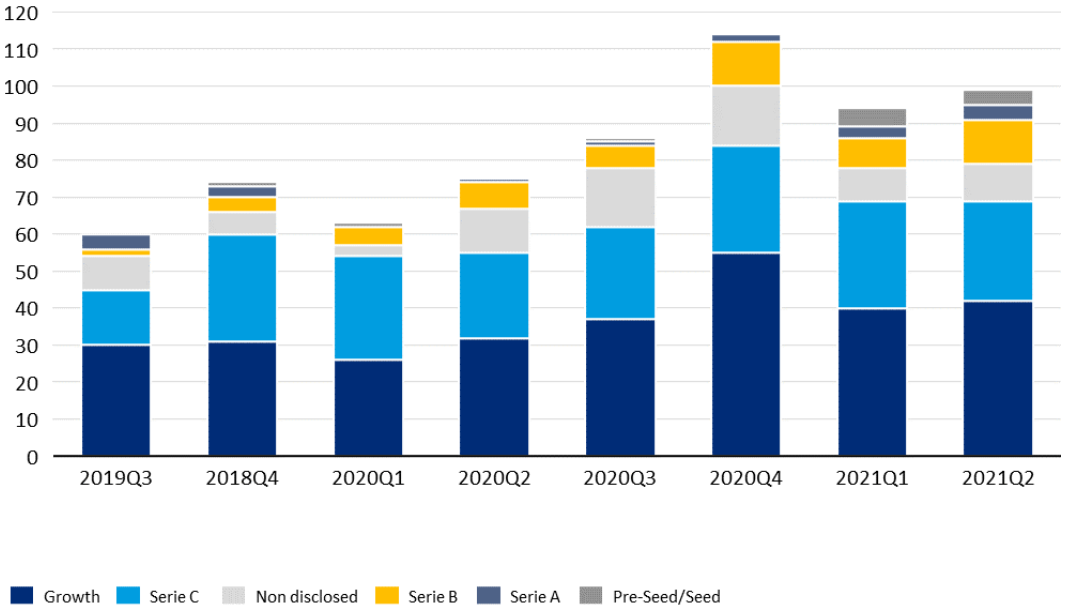
[74] Source: SAFE survey, Oliver Wyman analysis.

From the SME perspective, one of the main issues is their ability to argue a positive business case the digitalisation investments required

Assessing the expected benefits of a digitalisation investment is difficult for small and medium enterprises too, preventing them from preparing effective and well-articulated business plans. When drafting their business plans, they tend to focus on their growth strategy, which is where most resources are allocated. Such a focus can lead to concerns from credit institutions with respect to their ability to repay the requested financing, making it more difficult for the deal to be closed.

The Spanish startup ecosystem is healthy but is mainly financed by foreign capital. Operations have remained stable throughout the different series of financing, indicating the good health of the Spanish startup ecosystem and acting as proxies to predict investments in the coming years. However, most of this capital is foreign (84% in the first quarter of 2021 [75]), signalling a lack of national capital.

Figure 29: Investment activity in Spain[76]
Number of operations



[75] Source: Observatory of the startup ecosystem in Spain.
[76] Source: Observatory of the start-up ecosystem in Spain.

2.8. The Spanish innovation ecosystem

Spanish small and medium enterprises have access to a broad and diverse innovation ecosystem. Several entities, players and associations are making efforts to turn Spain into a more digital and innovative economy. They offer a wide variety of services for small and medium enterprises to help them grow and thrive, such as training and educational initiatives, regulatory interfaces, consulting, R&D support, knowledge sharing, and acceleration programmes.

The entities in the innovation ecosystem differ in terms of scope and expertise. Some are active at national level, while others are more local. Some are highly focused on specific technologies or themes, while others cover innovation and digitalisation from a broader perspective. The following figure illustrates the key ecosystem stakeholders. It builds on the information provided by the Atlantei4.0, where more than 600 entities are listed, together with a description of their services to support enterprises' innovation and digitalisation. These organisations are usually also connected to European counterparts (such as the European Cluster Collaboration Platform).

From the table we can observe a certain tendency towards national investment in specific issues.

On the other hand, we observe that the higher education sector conducts research with a local scope, suggesting that the sector is fragmented, as different research may be carried out in parallel, thus duplicating efforts in the same areas of study. Inter-university platforms have the potential to enhance the learning and development capacity of our universities.

Similarly, we observe a local but broad trend in information technology centres in terms of areas of study, suggesting that different specialties coexist.

Scientific centres maintain a balance, sharing research at both local and national levels on both specific and broad topics.

Incubators tend to have a national presence, motivated by economies of scale and the importance of having them in centres of development, such as Madrid, Barcelona, Valencia and Bilbao.

Figure 30: Spanish innovation ecosystem[77]

Stakeholder	Brief description	Coverage: Local – National	Specialisation/expertise: Specific – Broad
Investment fund (venture capital/ private equity)	Pool of capital belonging to numerous investors used to collectively purchase securities while each investor retains ownership and control of their own shares	National	Specific
University	High-level educational institution where academic research is done	Local (primary), National (secondary)	Specific
Technological Innovation support and Technology centres	Reference points and centres for innovation and technologies	Local	Broad
Scientific centres	Specialised R&D centres for innovation and technologies	National	Broad
Incubators	Organisations which provide early-stage companies with support and resources	National	Specific
Startups	Newly established business	National	Specific
Business Angels	Independent individuals who provide capital for the development of a business	Local	Specific
Accelerators	Business programme that supports early-stage, growth-driven companies through education, mentorship and financing	National	Broad
Private sector associations	Business associations focused on fostering the ecosystem development and knowledge exchange	National	Specific
Government agencies	Public agencies financing industry-driven R&D projects	National	Broad

▲ Primary focus △ Secondary focus

Unlike in the United States, business angels in Spain have a local reach, often motivated by the investment clubs of the universities themselves or networks in the local environment. However, while small compared to other countries, the level of specialisation is very high. One of the reasons for the underdeveloped risk capital market in Spain is the lack of or basic regulation in this area compared to the United States.

Accelerators, like incubators, are found in national environments of moderate specialisation.

Finally, private associations and government agencies operate at the national level, but there is a difference in that private sector associations focus on specific issues while government agencies cover a wide range of topics.

[77] Source: IESE Business School, Oliver Wyman analysis.

The European Commission's country report for Spain states that only 10.4% of companies consider universities as key stakeholders and all companies believe that universities have no incentive to promote knowledge transfer to small and medium enterprises. This could partially be due to the lack of flexibility or incentives to innovate and transfer technology across different stakeholders in Spanish public universities; the government is currently preparing a law to modernise the system, which would potentially address this issue.

Despite Spain's efforts to improve, results are not being achieved, and the efficiency of the innovation ecosystem appears to be low. There are three key reasons for this: [78]

- In Spain there is a gap between the supply of equity investment and demand — Spain only invests 0.36% of its GDP compared to Spanish companies' needs (0.55% of GDP).
- A lack of coordination and culture of collaboration in the Spanish ecosystem. For example, the level of collaboration between universities, technological centres and enterprises is low, as is the utilisation of the existing scientific potential. Small and microcompanies also lack a coordinating figure like the Centre for the Development of Industrial Technology (CDTI)[79], which serves medium and large enterprises.
- Agents are scattered throughout Spain, leading to an unbalanced system with different strengths depending on the area. Many regions will implement policies to promote digitalisation but these are often not centralised policies and will therefore be uncoordinated.

Spain lacks an adequate equity supply, making it more difficult for small and medium enterprises to access financing. These companies are highly leveraged and are therefore in need of greater levels of equity; however, not enough is being provided to currently meet demand. The private equity market gives us an idea of the financing conditions of the ecosystem. At a European level, the system is quite balanced — private equity firms invest 0.51% of GDP and companies receive investments of 0.52% of GDP. In particular, the United Kingdom has a surplus — private equity firms invest 1.4% of GDP and companies receive only 0.95%, so there is potential for more investment. Spain, on the contrary, has a deficit; Spanish private equity firms invest 0.35% of GDP while companies receive investments of 0.55% of GDP. This means there is an insufficient in-house supply of capital to meet the actual demand. Italy and Portugal are two other examples of countries with a high supply deficit, with investment of only 0.21% and 0.03% while receiving 0.33% and 0.55%, respectively.

[78] IESE business school.
[79] CDTI: Centro para el Desarrollo Tecnológico Industrial.

Figure 31: Industry statistics 2020 — Location of the private equity firm[80]

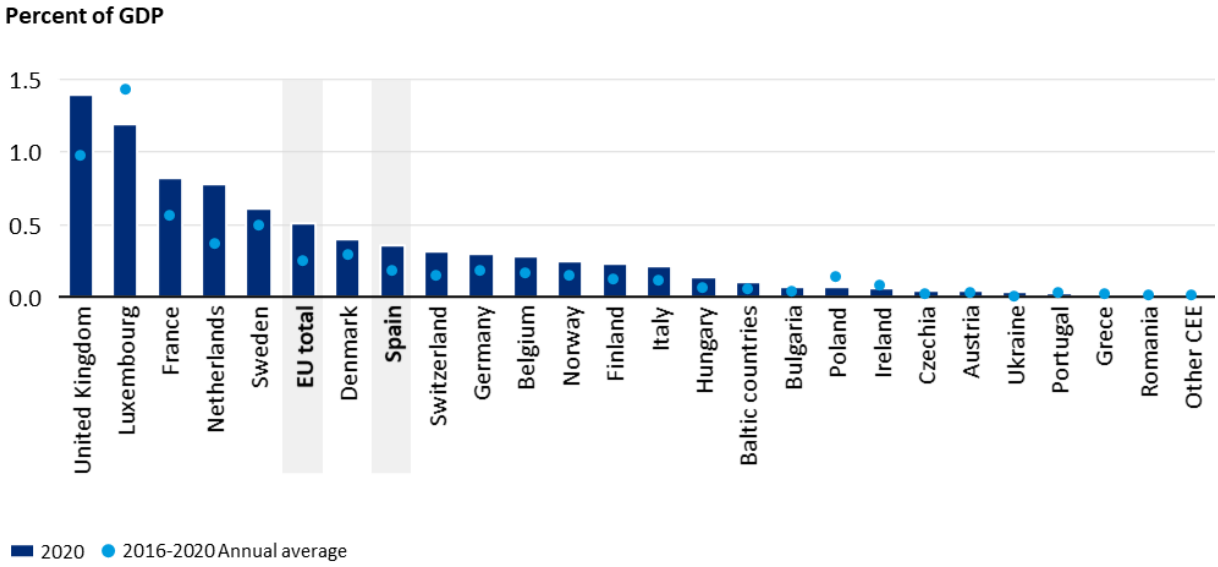
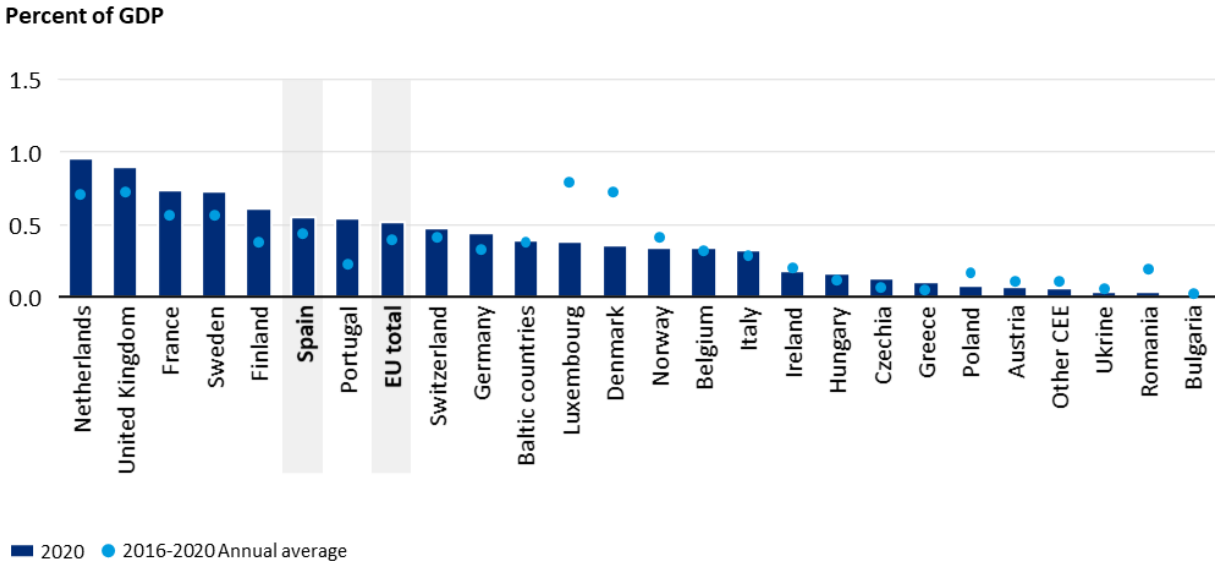


Figure 32: Market statistics 2020 — Location of the portfolio company[81]



[80] Note: Other CEE consist of Bosnia-Herzegovina, Croatia, Macedonia, Moldova, Montenegro, Serbia, Slovakia, Slovenia
Source: Invest Europe — Private Equity activity 2020; IMF; World Economic Outlook Database (GDP)/Invest Europe/EDC.
[81] Note: Other CEE consist of Bosnia-Herzegovina, Croatia, Macedonia, Moldova, Montenegro, Serbia, Slovakia, Slovenia
Source: Invest Europe — Private Equity activity 2020; IMF; World Economic Outlook Database (GDP)/Invest Europe/EDC.

2.9. The impact of COVID-19 and the government support for digitalisation

The Spanish government has launched a plan for SME digitalisation with a budget of €4.7 billion to steer and guide the digitalisation process, as part of the Spanish National Recovery and Resilience Plan financed by NextGenerationEU. The plan is expected to reach 1.5 million small and medium enterprises — 50% of the total in Spain — and is comprised of five individual aspects. Like the rest of the National Recovery and Resilience Plan, the financing needs to be allocated between 2021 and 2023 and spent before 2026. This will give a huge boost to the digitalisation of Spanish small and medium enterprises; however, the government needs to carefully plan and align with the other stakeholders on what happens after this extraordinary situation and EU financing comes to an end.

Box 3: Deep dive on the SME Digitalisation Plan 2021–2025

Table 1

Programme	Measure	Budget
Basic SME digitalisation "Kit Digital" (Digital Toolkit), part of the NextGenerationEU funds (deep dive in the following box)	• Kit Digital (€3 billion): promote a scalable, high-impact public-private collaboration mechanism • SME connectivity vouchers (€50 million): help to provide support for investments in connectivity for SMEs participating in public digitalisation programmes • Protect your business (€42 million): cybersecurity education and training as well as services and tools • Acelera Pyme (€26 million): ICT implementation support	€3.118 billion
Change management support	• Management training programme (€256 million): promote executive training in the digital management of companies • SME digital transformation experts' programme (€100 million): train young experts in SME digitalisation • Agents of change programme (€300 million): finance the incorporation of digital transformation experts as agents of change inside companies	€656 million
Disruptive innovation and digital entrepreneurship	• Disruptive innovation programme for SMEs (€100 million): foster disruptive innovation to promote the development of new products, services and business models • Support programme for innovative business clusters (AEI) (€115 million): support business innovation and competitiveness strategies developed by clusters of companies • Support programmes for digital innovation hubs (DIH) (€42 million) • Support programmes for digital entrepreneurship (€182 million): foster digital entrepreneurship and startups	€439 million
Sectoral digitalisation support	• Activa Industria (€38 million): digitalise the industry within the framework of the Connected Industry 4.0 national strategy • Digital tourism (€80 million): digital transformation of the sector focusing on processes and the development of new digital products and services • Trade digitalisation (€325 million): digitalisation of the retail and commercial distribution sector as well as its internationalisation	€443 million
Coordination, efficiencies and reforms	• Integrated network of support capacities for SMEs: reform and promote the setup of support hub networks providing greater cohesion • SME digital stamp: analyse the viability of and develop a certification scheme for the digital maturity of SMEs	-
	Total	€4.656 billion

Box 4: Deep dive on the Kit Digital

Description of the programme: "The programme aims to promote a scalable mechanism of public-private collaboration and high impact to facilitate/accelerate the digitalisation of small and medium enterprises, especially microenterprises and self-employed people, promoting the implementation of a set of basic digitalisation packages (Digital Toolkits) for starting out and for specific needs. The programme was developed by the State Secretariat for Digitalisation and Artificial Intelligence in collaboration with the private sector, and plans to invest €3 billion over the period 2021–2023."[82] The government is financing it in two phases: a first package of €500 million for smaller enterprises and a second package of €2.5 billion for microenterprises and self-employed people.

The government has launched a marketplace where:

- Digital providers can register and, after a verification process, offer their digitalisation packages.
- Small and medium enterprises can access, register and spend their vouchers on a series of services offered by providers.

The digitalisation packages cover various areas: website and SEO positioning, e-commerce, social media management, client and provider management, business intelligence and analytics, virtual office services and tools, process management, electronic invoices, safe communication, and online cybersecurity.

The first stage involves small and medium enterprises completing a self-diagnosis test of their digitalisation level. Then they can request digital toolkit help by asking for a digital voucher and using it for their selected provider on the website. They can also get advice through a network of 140 on-site offices distributed across the country or by phone.

Assessment of the programme: It is an outstanding and ambitious opportunity to boost the digitalisation process of Spanish small and medium enterprises. In order to make sure that this budgetary effort is successful and effective, public authorities should take the following into account:

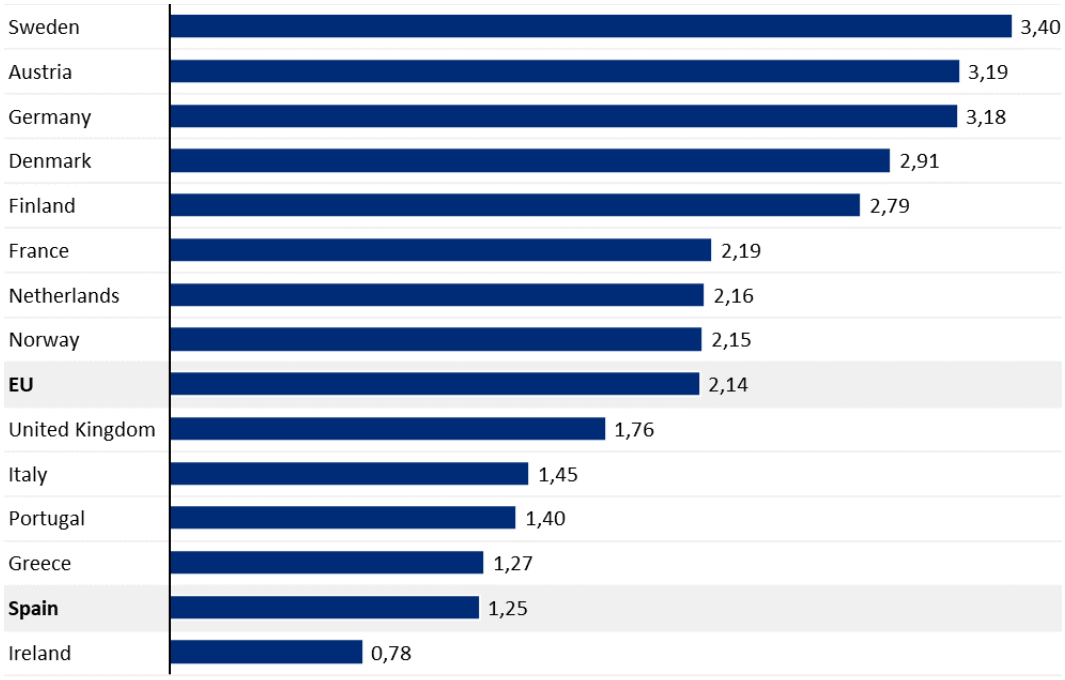
- Small and medium enterprises need advice and accompaniment:
  - Some companies do not understand what they need or what the offer is, leading to the possibility of the voucher being used for a known solution (such as e-commerce, websites or social media) and not in an area that might lead to higher efficiencies and comparatively greater levels of digitalisation (such as enterprise resource planning (ERP) and internal processes). The role of the advisors and on-site offices needs to be clear and incentivised to make sure they follow companies during the process.
  - The initial test on the level of digitalisation is only used for statistical reasons. It could be a source of information for guidance that enables companies to identify key areas for improvement. For example, Acelera Pyme offices could use that information to give specific advice to businesses and guide them through the process.
  - The user experience to select a technological provider could be improved — there are too many and it is difficult for a company to select the one that fits its needs, so clear advice here would be necessary.
- The funding provided by Kit Digital is likely to be insufficient to undertake a full digital transformation that in some cases might last more than one or two years — other private funding options should collaborate and engage with public authorities to make sure this transformation process does not end after Kit Digital funding.

Public authorities should monitor voucher functioning to avoid putting additional pressure on a very leveraged system; vouchers mean that someone is advancing the money, and government should monitor this to ensure that it is not the weaker stakeholder.

[82] https://portal.mineco.gob.es/RecursosArticulo/mineco/ministerio/ficheros/210127_plan_digitalizacion_pymes.pdf

Despite its recent budgetary efforts, Spain lags in R&D investment compared to other European countries, with R&D expenditure equating to only 1.25% of GDP[83] (2019 data used to avoid COVID-19 crisis effects; in 2020, all ratios increases due to the decrease of denominators (GDP), but the gap between Spain and its European peers persists.)

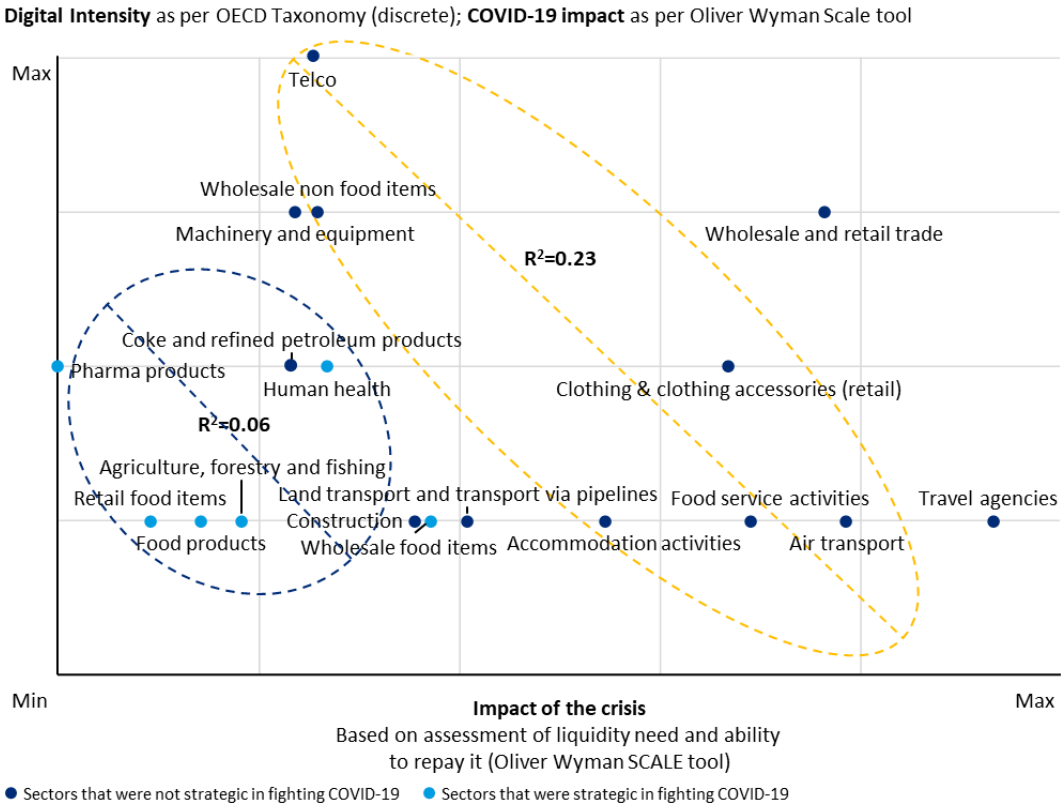
Figure 33: R&D expenditure as a % of GDP[84] 2019



Preliminary results show that sectors with lower digital intensity were the ones hit hardest by COVID-19, for example travel agencies, air transport, and clothing and clothing accessories. However, this was not the case for all sectors as some were strategic in fighting the pandemic; food and pharmaceutical products and in general sectors with high digital intensity suffered less from the crisis.

[83] Source: European Commission.
[84] Source: Eurostat; European Commission.

Figure 34: Digitalisation and COVID-19 impact[85]



As the chart shows, the sectors most exposed to COVID were those related to non-essential mobility and retail goods. The most protected sectors were the food industry, health, and agriculture. On the other hand, travel agencies, travel agencies, and tourism in general has suffered a notable impact during the pandemic.

Box 5: Oliver Wyman – Methodology to calculate COVID-19 impact

Oliver Wyman has developed a Pandemic Navigator combining predictive (near-term) and scenario (middle to long-term) capabilities for better management of health and business issues. The Navigator provides a quantitative basis on which governments, industry groups and companies can examine the impact of COVID-19 on public health and business.

Building on its epidemiology modelling capabilities and lockdown scenarios, Oliver Wyman has developed a tool to forecast the impact of COVID-19 at both sector and firm level. The COVID-19 Stressed Cashflow and Liquidity Evaluation Tool (SCALE) feeds the Pandemic Navigator scenarios, together with sector or firm-level financial data into a cashflow forecasting engine. This engine then analyses government support initiatives and specific sustainability criteria to produce key insights for enabling business decisions (such as the evolution of sector revenue and earnings; name-level viability). This report leverages the SCALE Tool to assess the viability of companies at sectoral level and identify those sectors that have been hit the hardest by the pandemic outbreak. To obtain such results, the following steps were followed from a methodological perspective:

- Development of three pandemic scenarios to address the high degree of uncertainty in the path ahead
- Layering of industry-specific assumptions on business impact on top of the developed scenarios
- Development of a dedicated methodology to triage companies on financial sustainability and assess affordability based on liquidity needs and sustainability
- Projection of monthly company-level calculations and aggregation to obtain country and sector-specific results on viability assessment

[85] Source: SCALE Tool; OECD Taxonomy of sectors by digital intensity; Oliver Wyman analysis.

A set of specific assumptions, layered on top of the pandemic scenario, enabled the calculation of impact by sector. The assumptions used to model sectors differently are the length of lockdowns, the recovery pace, business seasonality and the expected stress for key monthly cashflow key performance indicators, such as revenues, costs, delta working capital and financial debt.

A dedicated methodology to triage companies at name-level was used to evaluate companies on financial sustainability and to assess their affordability, based on liquidity needs and sustainability. Monthly company-level calculations were then projected and aggregated to divide, at country or sectoral level, companies into four categories:

- No liquidity need: companies that are able to face the crisis without additional liquidity need.
- Viable with liquidity injection: companies that need additional liquidity to face the crisis, but are able to fully repay interest and principal over a five-year horizon.
- Potentially not viable: companies that need significant liquidity to face the crisis and that will be able to serve interest on debt, but not to fully repay principal over a five-year horizon to return to pre-crisis debt levels.

Not viable: companies that are not able to repay either the interest or the principal on the debt they would need to cover the losses through the downturn.

NextGenerationEU is the greatest stimulus package (around €807 billion) financed by the European Union. Financed through debt issuance, the programme's goal is to help repair the economic and social damage caused by the COVID-19 pandemic and ensure long-term ecological and digital transformation.

Figure 35: NextGenerationEU breakdown[86]

Funds' distribution

NextGenerationEU breakdown (€806.9 billion)

Programme	€ billion	Description
Recovery and Resilience Facility	723.8 • 385.8 loans • 338 grants	Offer financial support to make EU economies more sustainable, resilient and better prepared for the challenges and opportunities of the green and digital transition
REACT-EU	50.6	Supporting key sectors to lay the foundations for a strong post-COVID-19 recovery
Just Transition Fund (JTF)	10.9	Reduce greenhouse gas emissions by at least 55% by 2030 and achieve climate neutrality by 2050
Rural development	8.1	Support rural areas in carrying out the necessary structural changes in line with the European Green Deal
InvestEU	6.1	Encourage private investment in projects throughout the Union
Horizon Europe	5.4	Lead growth through the EU research and innovation programme
RescEU	2.0	Protect citizens from disasters and manage emerging risks

[86] Source: European Commission.

2.10. Review digital technologies to support a green and sustainable economy

Digitalisation can enable sustainability: it can save one out of five tonnes of CO_2. According to the Intergovernmental Panel on Climate Change (IPCC) and Oliver Wyman internal analysis, digital technologies help develop a green and sustainable economy by:

- Reducing carbon emissions by 85% due to cloud migration
- Increasing building energy efficiency by 82% thanks to advanced management
- Improving Infrastructure efficiency by 79% thanks to new technologies

On average, taking into consideration multiple real-life situations, buying a product in-store produces 1.5–2.9 times more CO_2 emissions than an online purchase.

Savings derived from digitalization can be accomplished through more sustainable processes and better decision-making. Industry 4.0 (internet of things, sensors, robots, etc.) has improved supply chain processes in terms of energy savings. In addition, the automation of tasks has improved efficiency and decreased costs, and technologies such as artificial intelligence, the internet of things and big data improve connections and the exchange of information, making products, processes and services more circular. An example of better decision-making is introducing environment control: technology is the best tool to guarantee compliance with laws and regulations for environmental protection with advanced measurement and analysis systems. Another example is artificial intelligence; this has been key to complex data analysis and management aimed at sustainable decision-making in areas such as climate change, air and water safety, biodiversity conservation and disaster resilience.

Sustainability in the digital environment is a fundamental requisite to achieve countries' environmental objectives. Although the benefits of new technologies are evident, prudent and reasonable usage is key as there can be negative effects:

- 4% of greenhouse emissions are currently generated by electronic devices. This number could double to 8% by 2025.
- 3.2% of total worldwide carbon emissions by 2025 are expected to be generated by the energy consumption of data centres. They will consume one-fifth of global electricity.
- 14% of the global carbon footprint in 2040 will be generated by the storage of digital data.
- 55% of energy is consumed by data traffic, representing more than half of the global environmental impact.
- As 5G is more efficient, the electricity consumption of a 5G station is three times that of a 4G station.

While implementing new technologies, small and medium enterprises need to consider:

- Aligning the ecological and digital transition and creating across-the-board metrics
- Integrating ICT with decarbonisation technologies
- Reducing residuals and extending the life of devices (second life uses)
- Avoiding greenwashing strategies

They also need to participate in and promote sustainable initiatives such as sustainable digitalisation, a solidarity initiative by the CEOE Foundation, and others, with the objective of contributing to a circular economy through the reuse of electronic devices.

Therefore, while it is true that the storage and transport of information is one of the largest sources of energy consumption, we can see that the advantages that small and medium enterprises can achieve thanks to implementable digital solutions outweigh the disadvantages. Finally, digital technology in the SME environment will facilitate the efficient treatment of waste and will make it possible to find avoidable waste generation points in the value chain and thus identify and reduce them. The digitalisation of small and medium enterprises will facilitate a green and environmentally friendly transition in Spanish society.

2.11. Digitalisation gap and challenges for Spanish SMEs

Figure 36: Digitalisation gap assessment framework[87]

Demand (traditional SMEs)	Market matching		Supply (tech providers)
Awareness	Awareness/knowledge	Marketing	Awareness of SME market
Business needs	Product suitability (standard vs. tailored)	Product development	**Strategic fit of SME market**
Technical capabilities	**Coaching/advisory**	Training that address needs	Ability to implement
Financial capabilities	**Price/financing**	Pricing, volume and costs	Financial capabilities
National strategy and public-private coordination Government agencies can play a central role through the definition of a national strategy and prioritisation, coordinated across all key elements of the strategy (e.g. education, advisory, financial support)			

X = Key gaps identified

After reviewing all the data provided above we can determine that Spain is on the right track towards SME digitalisation; however, there are still challenges preventing that transformation from happening quickly and more efficiently. More concretely:

Demand side – SMEs:

- There is a lack of knowledge on existing digital solutions
- It is difficult to prove the level of digitalization / digital maturity to relevant stakeholders (such as banks)
- Digital adoption levels are lower than the EU average (e.g. 50% of companies have e-commerce websites, lower than the EU average)
- There is a disparity in levels of digitalisation between companies in the same industry.
- Technical capacity is poor.

[87] Source: Oliver Wyman.

This is, there is a lack of knowledge on existing digital solutions. Spanish small businesses sometimes not only lack the economic resources to implement technological solutions, but also the technical knowledge that would enable them to carry out or manage tool integration operations. This generates a vicious cycle: low awareness and low usage, leading to poorly qualified people, low penetration and low awareness.

Supply side:

- Fragmented offer between technologies and providers
- Asymmetric offer between different sectors (and sometimes not adapted to the needs of small businesses)
- Technological startups and digital native small and medium enterprises have limited interest in providing and/or understanding more traditional small businesses' real needs

Market matching:

- Difficult to find the right solution due to market fragmentation
- There are a limited number of digital innovation hubs (DIHs) and they are still under development (potentially one of the many reasons why SME workers lack the technical knowledge to implement technological solutions given the crucial role these hubs play in educating and reskilling employees)
- There is limited cooperation among small and medium enterprises (such as a union to address different markets/products)

Financing:

- The low availability of (physical) collateral is a key differentiating factor, as it makes financing the advanced digitalisation of more traditional small and medium enterprises that lack scale more challenging
- High interest rates, finding mechanisms to collateralise debt, finding solutions to provide "governmental" securitisation/back-up, etc. pose challenges

Some recommendations to address these challenges are outlined in section 4 (Recommendations).

3. LESSONS LEARNT FROM OTHER JURISDICTIONS

This section outlines best-in-class practices worldwide supporting the adoption of digital solutions among small and medium enterprises. The selected cases look at the different dimensions at stake in a Spanish context through real-life examples.

In addition, dedicated boxes provide a summary of the measures implemented in other countries to fight the negative impact of COVID-19 and support the economy.

Cases in sections 3.1 and 3.2 focus on the demand side of the equation, illustrating solutions to address key barriers to digitalisation faced by small and medium enterprises. A wide array of financing products, mainly grant or debt-based, launched in Germany and Luxembourg specifically to support SME digital projects aim to overcome the financing barrier. The initiatives of the French Bpifrance are examples of tools provided to traditional small businesses to bridge the knowledge gap and increase awareness of the potential of digital technologies.

Cases in section 3.3 provide examples from the supply and matching sides, including Singapore's private-public initiative to fit and match cutting-edge technology providers with the demand of traditional small and medium enterprises (sections 3.3.2 and 3.3.3), as well as to provide them with access to industry experts, consultants and education.

The case in section 3.4 provides the example of Denmark's nationwide digital strategy to become a digital frontrunner in the near future.

3.1. Bridging the financing gap

This section introduces the most relevant financing products to support SME digitalisation projects across different jurisdictions:

- **Bavaria (Germany):** grant or loan at favourable conditions (Bavarian Technology Promotion programme)/voucher (innovation voucher)
- **Luxembourg**: loan at favourable conditions (SNCI)

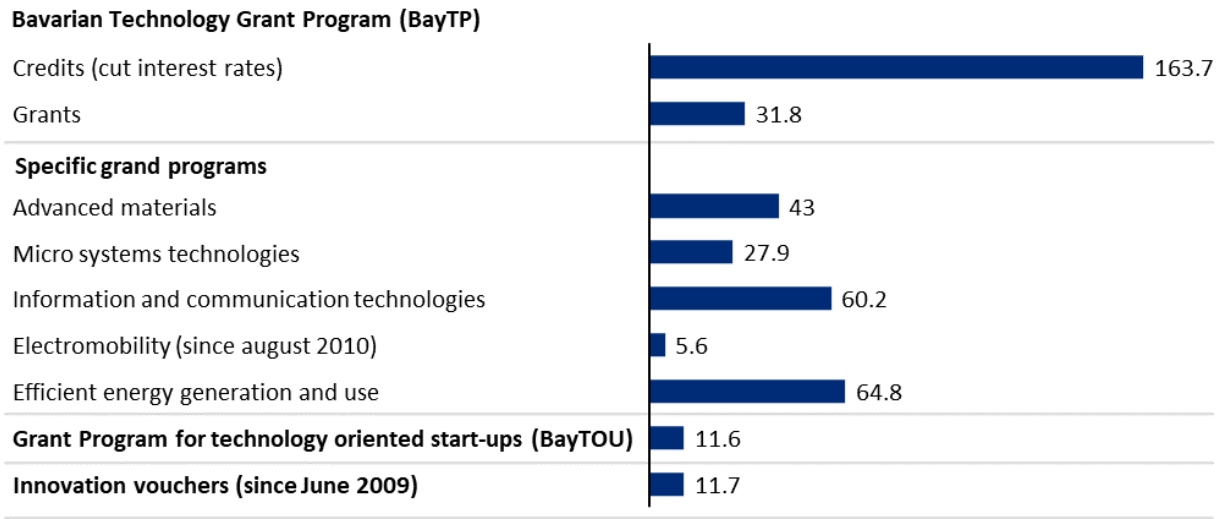
3.1.1 Bavarian programmes

The Bavarian Technology Promotion programme is tailored to the needs of small and medium-sized enterprises, in particular coping with the increasing dynamics of digital progress.

Table 2: Case study — Bavarian Technology Promotion programme — Key terms[88]

Dimension	Description
Goal	• Support projects aimed at developing: • Technologically new or significantly improved product • Production processes and knowledge-based services (development projects)
Eligibility	• Project requirements[89] • SME requirements[90]
Type and extent of funding	• The funding is provided as: • Grants (for products), up to 25% of eligible costs • Loans (for processes), up to 100% of the eligible costs of the project • "Eligible costs" are computed based on pre-determined amounts for each cost item[91]
Sponsor(s)	• The State Ministry of Economic Affairs, Media, Energy and Technology is the grant authority, issuing the grant decision and paying the subsidies • LfA Förderbank Bayern provides the application form and confirms whether the loan conditions have been met

Figure 37: Historical performance of the Bavarian Technology Promotion programme[92]



[88] Source: Oliver Wyman Analysis based on Bayern Innovativ Gesellschaft fur Innovation und Wissenstransfer website material.
[89] Project requirements: Characterised by a high innovation content, i.e. the technologies, products and services to be developed or used must go beyond the state of the art and be implemented by the applicant themselves; economically promising project, at least in the medium term, in view of market conditions.
[90] SME requirements: Less than 400 full-time equivalent employees (FTEs); located in Bavaria; sufficient creditworthiness.
[91] Cost items include personnel costs, costs for instruments and equipment used for the project, costs for contract research and other costs (material, supplies, etc.) that arise directly from the research activity. In the case of process digitalisation, they include the costs of obtaining, validating and defending patents and other intangible assets, and feasibility study costs.
[92] Source: Bavarian Ministry of Economic Affairs and Media, Energy and Technology.

Innovation vouchers

Innovation vouchers are designed to support the planning, development and implementation of new or improved products, production processes or services.

Table 3: Deep dive on innovation vouchers — Key terms and description[93]

Dimension	Description
Goal	• Innovation voucher 1 supports the planning, development and implementation of new products, production processes or services, or the substantial improvement of existing products, production processes and services in the area of technical or technological innovations • Innovation voucher 2 is intended to enable particularly financially intensive and thus economically riskier innovative projects for the company • Innovation voucher special provides the possibility, after using innovation voucher 1 and 2, to continue successful projects with a higher financial requirement, which require highly specialised support
Eligibility	• Project requirements (eligible sectors/activities)[94] • Company requirements[95]

Type and extent of funding	• Funding of 40% of eligible costs — can be potentially increased to 60% in "regions with special need for action" or when commissioning a university or non-university research institution
	• Capped at:
	  • €15 000 of eligible costs: innovation voucher 1
	  • €30 000 of eligible costs: innovation voucher 2
	  • €80 000 of eligible costs: innovation voucher special
	• Companies that join together for a larger project can combine their innovation vouchers. A maximum of four vouchers can be combined. All participating companies must be directly involved in the innovation process and strive for the exploitation of product innovation. Pure marketing or distribution partners or subcontractors are not eligible

Sponsor(s)	• The State Ministry of Economic Affairs, Media, Energy and Technology

Digital Bonus Bavaria

As part of the initiative Bavaria Digital, Digital Bonus Bavaria supports small and medium enterprises with business premises in Bavaria on their journey to digitalisation**.** Digital Bonus Bavaria supports the development, introduction or improvement of processes, services and products through ICT hardware, software and the migration and transfer of ICT systems and applications in companies, and the introduction or improvement of IT security.

Launched in October 2016, Digital Bonus Bavaria is offered under three modules:

- Standard (grant only, max. €10,000)
- Plus (grant only, max. €50,000)
- Loan (max. €2 millions)

Under the Standard and Plus programmes, some project costs may be subsidised (up to 50% for small enterprises and up to 30% for medium enterprises). Eligible costs include expenditure on services provided by external providers, including expenditure for hardware and software that are necessary to implement the measures undertaken.

[93] Source: Oliver Wyman analysis based on Bayern Innovativ Gesellschaft fur Innovation und Wissenstransfer website material.
[94] Project requirements: material and design studies, studies and concepts for manufacturing technology, construction services, service engineering, prototyping and design, product tests for quality assurance.
[95] Company requirements: SMEs with less than 50 FTEs, startups, located in Bavaria, maximum annual sales/total balance sheet of €10 millions.

Table 4: Deep dive on the Digital Bonus Bavaria — Key terms and description[96]

Dimension	Description
Goal	• Digitalisation of processes (Industry 4.0, enterprise resource planning, customer relationship management, document management system, manufacturing management system, etc.) • Improvement of IT security (firewalls, data security, etc.) • Digital platforms (configurators, websites, online store, etc.) • Prolongation of the Bavarian Digital Bonus Programme until the end of the next legislative period (according to a government declaration from 18 April 2018)
Eligibility	• SMEs with business premises in Bavaria
Type and extent of funding	• Approximately 9 000 applications received since launch • Around €100 million requested in grants • Total investment of around €330 million mobilised
Sponsor(s)	• The State Ministry of Economy Affairs, Media, Energy and Technology

3.1.2 Luxembourg programme

Direct loan for research, development and innovation

The programme was launched at the end of 2011 by the Société Nationale de Crédit et d'Investissement (SNCI) with the objective of facilitating innovation in small and medium enterprises, leading to new products, services, processes or organisational methods. The programme's focus is on technological innovation.

[96] Source: Oliver Wyman analysis based on the program Digitalbonus Bayern, from Bayern Innovativ Gesellschaft fur Innovation und Wissenstransfer (www.digitalbonus.bayern).

Table 5: SNCI loan — Key terms[97]

Dimension	Description
Goal	• Supports technological innovation for products, services, processes or organisational methods that are new or substantially better than the state of the art in the industry sector concerned, and which carry a risk of technical or industrial failure
Eligibility	• Project requirement[98] • SME requirements[99]

Type and extent of funding	• Loan
	  • Up to 40% of eligible costs
	  • Maximum €250 000
	  • At least 35% of investments and expenses must be co-financed by the company's own resources
	  • Maximum duration of ten years
	  • The interest rates are fixed by the SNCI's Board of Directors based on capital market interest rates and SNCI refinancing costs
	  • First repayment due no later than two years after the conclusion of the contract
	  • Repayment in regular quarterly instalments
	• Eligible costs:
	  • Investments in depreciable assets and negative operational cash flows carried out within the project (equipment, machinery and professional facilities, personnel expenditures, patent filing fees, expenses related to contract research, use of databanks, technical libraries and laboratories, acquisition of patents/licences, project feasibility studies, innovation support services such as market research, implementation of new regulatory standards, testing and certification, as well as a one-year budget related to marketing/promotion of new products/services)
	  • Production and distribution costs, as well as land and buildings, are excluded

Sponsor(s)	• SNCI

3.2. Bridging the knowledge/awareness gap

3.2.1 Background

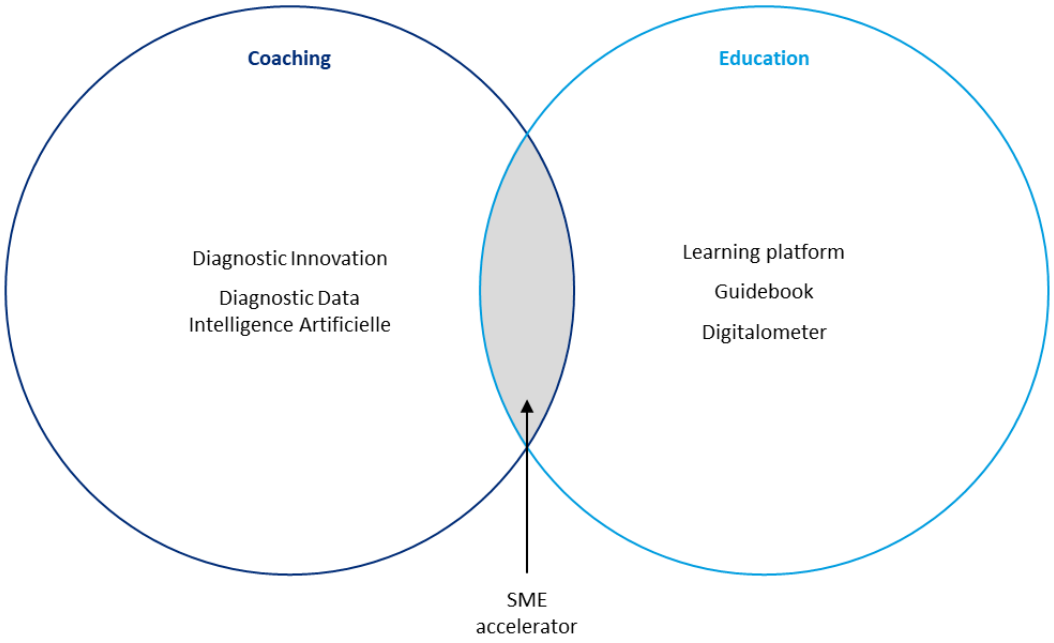
Bpifrance, founded in December 2012, is now a well-established presence in France supporting the small to medium-sized regional economy, restoring competitiveness and reinforcing business investments. While it is owned by the French State and the Deposits and Consignments Fund (Caisse des Dépôts), some of its initiatives are co-financed by the private sector.

[97] Source: Oliver Wyman analysis based on SNCI website.
[98] Project requirement: Innovative technological nature.
[99] SME requirements: Have possessed a business permit for at least four years and have a substantial impact on national economic development; innovative enterprises (on the basis of the business plan they will develop to commercialise the solution).

Over time, Bpifrance has developed dedicated tools to support the digitalisation of local enterprises. Besides offering financing and investment solutions, some actions have proved particularly effective in bridging the knowledge gap by:

- Raising awareness of the benefits of digitalisation, by providing education and training to entrepreneurs
- Supporting companies (mostly small and medium companies) in developing implementation plans and roadmaps, through dedicated coaching programmes

Figure 38: Overview of selected Bpifrance initiatives[100]



3.2.2 Coaching programmes

The Diagnostic Innovation programme helps small and medium enterprises to familiarise themselves with innovation, particularly technological innovation, by integrating this dimension into their development strategy and facilitating the use of skills that are helpful in a startup environment. The programme provides grants of up to €8 000 and is reserved for small and medium enterprises.

The Diagnostic Data — Artificial Intelligence programme is aimed at small and medium enterprises that are considering launching specific innovative projects related to data and artificial intelligence, even if the commitment decision has not yet been made.

[100] Source: Oliver Wyman analysis based on research.

Table 6: Overview of Bpifrance digital coaching programmes[101]

	Diagnostic Innovation	Diagnostic Data – Artificial Intelligence
Goal	• Financing the provision of advisory and/or technical services from external providers to allow SMEs unfamiliar with innovation to integrate this dimension into their development strategy	• Financing the provision of expert advice from external providers to entrepreneurs to explore the implementation of data and artificial intelligence in their business • Bpifrance have identified their own list of experts in data/artificial intelligence; SMEs can therefore either propose an expert to Bpifrance or request an expert from their expert list

Services in scope	• Pre-technical studies, trials, modelling, market research, research of technological partners, filing of a first French patent, etc.
	• Excluded: mandatory regulatory services, "quality" diagnostics, collective studies, legal fees,
	services performed by an entity having a legal relationship with the applicant
		• Awareness of benefits/challenges of big data, by considering the sectoral and entrepreneurial context of the company involved
		• Analysis of potential implementation options, by considering:
		  • Context of evolution, overall strategy, customer basis, distribution channels, financial/regulatory framework, financials, SWOT analysis
		  • Value creation opportunities in the optimisation of operations, enhancement of customer experience, new products, third-party monetisation of data, etc.
		  • Potential barriers to implementation (human and financing capital)
		• Recommendations including project prioritisation, risks and implementation plan

Eligibility	• SMEs (according to the EU definition) • Not having benefited from innovation support for at least two years	• SME or ETI (mid-cap) with less than 2 000 employees (not majority-controlled by a company which is not itself an SME/ETI) • Registered in France • Not in financial difficulty (sales/turnover ≥ €500 000)
Duration	• Not specified	• Three to six days, depending on the maturity of the company, the complexity of the project and the intensity of the support.
Cost	• Subsidy capped at €8 000, up to 50% co-financed by Bpifrance	• Eligible expenses amount to between €3 000 and €10 000, 50% co-financed by Bpifrance

[101] Source: Oliver Wyman analysis based on desktop research.

3.2.3 Education programmes

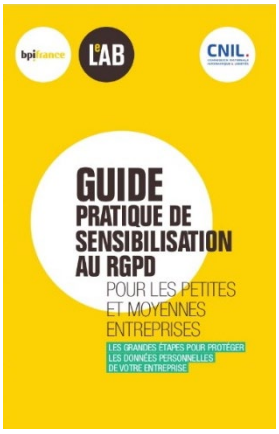
Bpifrance Université

Bpifrance University offers online training to SME clients and members of Bpifrance's communities. The offer is centred around:

- Free e-learning platform
- Seminars in partnership with business school and thematic workshops with experts

Digital handbooks

Figure 39: Cover page of handbook on GDPR Regulation[102]

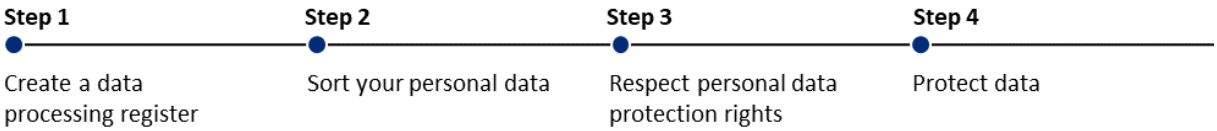


Bpifrance develops, often in cooperation with other public or corporate partners, practical guides for its clients (the vast majority being small and medium enterprises) to support entrepreneurs in understanding the latest trends in digitalisation.

An example is the guide on the new EU General Data Protection Regulation (GDPR), which came into force at the end of May 2018 and was developed with the support of the French Data Protection Authority (CNIL).

The guide aims to put the entrepreneur at the centre of the implementation of the GDPR and organises information on how to comply with the EU regulation and fully benefit from the framework in a simple way, by leveraging data analytics.

Figure 40: Example of action plan for GDPR implementation in SMEs[103]



3.2.3.1 Digitalometer

In 2018, Bpifrance enriched its support programme for the digital transformation of small and medium enterprises and mid-caps by launching the Digitalometer. This online tool allows companies to measure their level of digital maturity and to identify their progression phases, needs and challenges.[104] The platform analyses all the digital tools that can be used by companies at all levels to improve selling, production and administrative processes, and to restructure their organisation.

"We wanted to create a simple, easily accessible and business-oriented tool."

Fanny Letier, Executive director of Fonds propres PME et Accompagnement

[102] Source: Bpifrance website.

[103] Source: Bpifrance website.

[104] The idea of this tool is similar to the one behind the Brexit SME Scorecard launched by Enterprise Ireland to help companies self-assess readiness for Brexit.

The Digitalometer is a 15-minute free online questionnaire that enables entrepreneurs to:

- Do a self-assessment of the level of digital maturity of their company, across four dimensions
- Receive personalised recommendations to support the company's transformation
- Access the Bpifrance offer to support the digital transformation process: e-learning modules, consulting modules, LAB study, testimonials from companies and experts on the subject

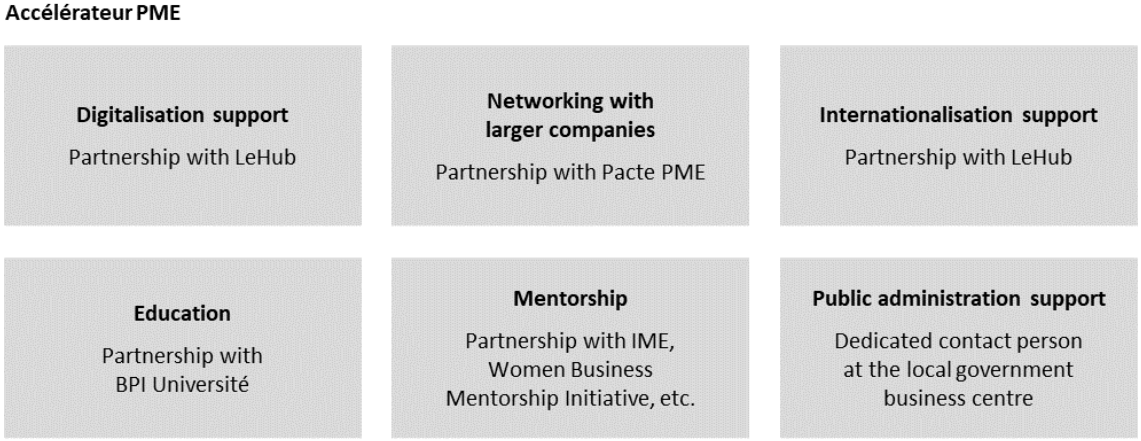
3.2.4 Coaching and education programmes

The SME Accelerator

In March 2015, Bpifrance and the French Directorate General for Enterprise launched the SME Accelerator programme (Accélérateur PME), with 68 small and medium enterprises selected to be part of the programme's first class. The 24-month programme aims to support businesses looking to scale up to mid-cap (*Entreprises de Taille Intermédiaire* or ETI) status.

The programme includes group seminars and individual support services. Selected companies receive personalised advice on how to optimise their growth potential and how to expand to become mid-caps. They have access to the premium support services provided by Bpifrance and its partners, covering different areas of business development, including digital, internationalisation (Business France) and relations with major corporations (Pacte PME), among others.

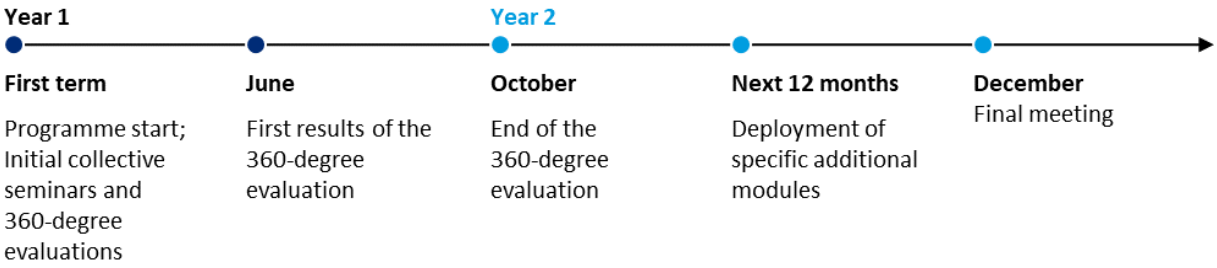
Figure 41: SME Accelerator — Overview of services offered[105]



After an initial analysis, each company will have identified its key growth challenges and will be directed towards the support tools best suited to its needs (innovation, commercial development, external growth, international development, etc.).

[105] Source: Oliver Wyman analysis based on desktop research, leveraged from BPIfrance public information.

Figure 42: SME Accelerator — 24-month development plan[106]



Impact of the SME Accelerator Programme

The selected firms are based all over France and are highly diverse in terms of sector and size. The median company generates revenue of around €22 million, employs 105 people and grew by around 34% over the past three years.

Since 2015, more than 120 small and medium enterprises have been "accelerated" by the programme, which has had a significant impact on their digital transformation as well, with more than half of them having kicked off some innovation initiative. According to Bpifrance's annual report:

- 67% have digitalised internal processes (customer relationship management, enterprise resource planning tools, dematerialisation, etc.)
- 55% have enhanced digital communication channels

In addition, the business association France Digital has committed to supporting small and medium enterprises in the downturn through dedicated initiatives, such as the provision of a toolkit on teleworking.

3.3. Building a tech marketplace and providing access to industry

3.3.1 Background

Government initiatives in Singapore have focused on facilitating the match between the demand for digital solutions, encouraged among traditional small and medium enterprises, and the supply of such technologies offered by local players from the startup landscape, thus creating a digital marketplace and enhancing opportunities for local companies. Furthermore, Singapore has promoted initiatives giving innovative companies access to industry experts, consultancies and coaching. Particular focus has been placed on supporting innovative companies by raising awareness of the demand for digitalisation emerging from traditional small businesses, understanding their needs and shaping their offering consistently.

The TechMatch programme was launched in August 2016 in partnership with the Development Bank of Singapore (DBS). In a similar vein, the SMEs Go Digital initiative was implemented as part of the government plan in April 2017.

[106] Source: Oliver Wyman analysis based on desktop research.

3.3.2 The DBS TechMatch programme

Matching supply and demand for digitalisation

In August 2016, the Development Bank of Singapore, together with Infocomm Investments Pte Ltd (IIPL) and Intellectual Property Intermediary Singapore (IPI), launched an initiative to help Singaporean small and medium enterprises embark on innovation projects and build digital capabilities. Infocomm Investments is a wholly-owned subsidiary of the Infocomm Development Authority (IDA) of Singapore. Its mandate is to build and invest in Singapore and global infocomm technology startups. Managing more than $200 million, IIPL accelerates the development of startups in their formative phase and invests further as they move towards growth and expansion.

Intellectual Property Intermediary was established under Singapore's Ministry of Trade and Industry. It focuses on industry needs and translates their innovation objectives into specific technology requirements to enable enterprises to develop new processes, products and services.

The TechMatch programme enables traditional small and medium enterprises to submit a business problem online through a DBS platform and be matched with a tech solution provider. The business problem will be reviewed by the DBS team and the company will then be connected with an appropriate tech solutions provider.

DBS is the connector, providing the online matching platform and the relationship, IPI has a global network of tech partners, and IIPL has a track record in helping businesses develop solution concepts. To deliver a "match" or the business solution, IPI will source specific expertise requested by the company through its tech marketplace, which features technologies from various industries and will facilitate a tech transfer or R&D cooperation, while IIPL will run hackathons to develop solutions for companies with business problems that do not have ready tech fixes.

Once the problem is solved and the firm has been matched with a counterparty tech company, the programme suggests further initiatives to support the implementation and go-live of the solution, such as grants, bridge loans for project financing and intellectual property financing schemes upon completion of the project.

3.3.3 The SME Go Digital programme

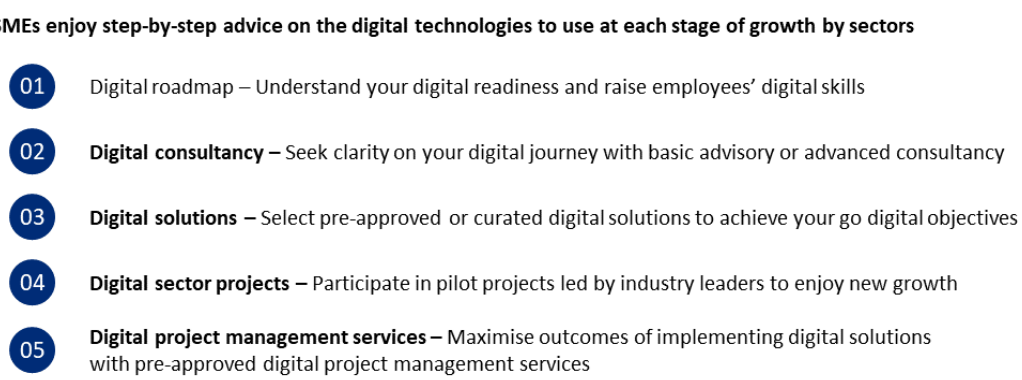
Industry Digital Plans (IDPs)

The SMEs Go Digital programme was launched in 2017 by the government agencies Infocomm Media Development Authority (IMDA) and Enterprise Singapore, with the aim of helping small and medium enterprises to keep up with the pace of technological change in the digital economy.

The initiative targets small and medium enterprises operating in sectors where digital technology can significantly improve productivity. For now, these six sectors are food services, logistics, retail, wholesale trade, environmental services and security. For each of these sectors, IMDA is developing Industry Digital Plans (IDPs) that will make it easier for small and medium enterprises to adopt digital technology to boost growth and productivity, and to participate in national innovation initiatives.[107] These plans introduce a broad range of initiatives, advice, self-learning tools and other services. Each plan is tailored to a specific industry and is structured around five key focuses, as illustrated in the figure and further explained below.

[107] Source: Infocomm Media Development Authority (IMDA) website: Industry Digital Plans.

Figure 43: Five key focuses of Industry Digital Plans (IDPs) under SMEs Go Digital[108]



The digital roadmap helps small and medium enterprises to assess their digital readiness and identify opportunities for going digital as well as training to raise employees' digital skills. It can be considered as a starting point to embark on the digital journey. It consists of an Industry Digital Guide, Industry Fact Sheet and an SME Self-Assessment Checklist. The Industry Digital Guide includes an Industry Transformation Map and outlines a three-step approach for small and medium enterprises in that industry to (1) get the digital economy ready, (2) grow in the digital economy, and (3) leap ahead. Moreover, the Industry Digital Guide suggests training courses for various types of employees working at small businesses and introduces the four focuses of the Industry Digital Plan outlined below.

Digital consultancy is offered to small and medium enterprises, distinguishing between basic and specialist consultancy. Those that wish to have a more comprehensive review of their business can approach the SME Centre business advisors for a free business diagnosis and advice on the relevant digital solutions (basic advisory and consultancy). Companies that require specialist advice on more advanced digital solutions (such as cybersecurity, data analytics, internet of things) will be referred by the SME Centre business advisors to the SME Digital Tech Hub (specialist advisory and consultancy).

To make it easier to adopt digital technologies, IMDA has pre-approved digital solutions that are proven, robust and that meet businesses' needs. Small and medium enterprises can explore the list of pre-approved digital solutions supported under the productivity solutions grant (PSG) on the Tech Depot website of the SME Portal[109]. With the grant, they can get up to 70% funding support for these digital solutions. Further details on the grant, the high-tech procurement pipeline and tech vendor selection are described in the section below.

Through the Industry Digital Plans, IMDA is identifying digital sector projects that aim to lift the whole sector and help small businesses to grow. This is done by partnering large companies or industry leaders to co-create the solutions for such projects in the best interests of small businesses and at the same time align with national initiatives such as the National Trade Platform.

Small and medium enterprises can engage the digital project management services under the SMEs Go Digital programme to help change their business processes, redesign jobs and better manage the implementation of digital technology for a more holistic and sustainable outcome. Digital project managers can help them yield more sustainable outcomes from digitalisation. The Singapore Manufacturing Federation (SMF) has been appointed as the first operator. Companies looking to engage digital project management services can receive funding support of up to 70% of the qualifying costs.

[108] Source: Infocomm Media Development Authority (IMDA) website: Industry Digital Plans.
[109] https://www.imda.gov.sg

Digital solutions — deep dive

This section further explores the digital solutions offered to small and medium enterprises as part of the SMEs Go Digital programme, detailing both the digital solutions on offer as well as the tech vendor selection.

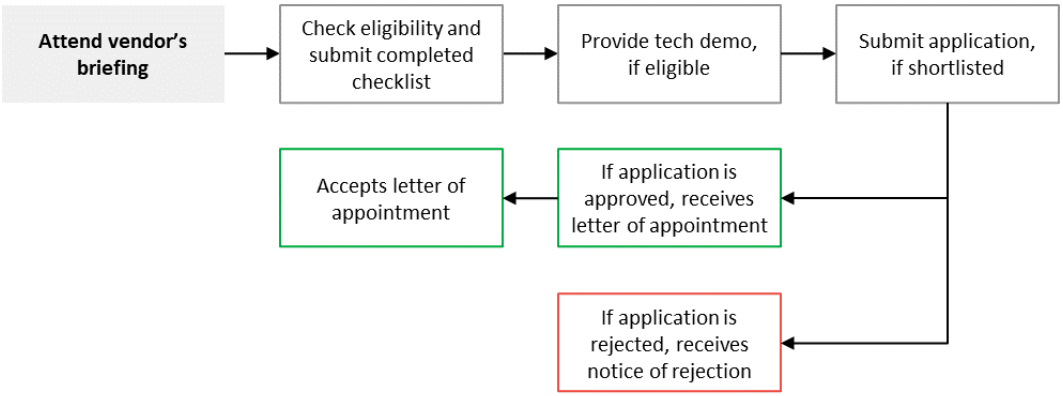
Small and medium enterprises can explore the list of pre-approved digital solutions supported under the productivity solutions grant on the Tech Depot website of the SME Portal. These include around 50 solutions, covering customer, inventory, workflow, finance, marketing, human resources and project management, as well as quality assurance and data analytics.

Singapore-based companies can access these solutions through the productivity solutions grant, which offers up to 70% funding support. The grant streamlines existing grant schemes with pre-scoped solutions into one, thus requiring businesses that wish to undertake productivity solutions to apply for support under only one grant scheme.

"We believe every business needs to be a digital business to remain relevant and thrive in the future economy. As part of SMEs Go Digital program, IMDA partners the infocomm industry to offer SMEs a list of pre-approved digital solutions that can be readily adopted to meet their business needs. These pre-approved solutions were identified with the help of relevant government agencies and have been tried and tested by pilot SME users. We encourage SMEs to make full use of these digital solutions in their digitalisation efforts."
Tan Kiat How, Chief Executive, IMDA

Vendors of high-tech solutions play a key role in the SMEs Go Digital programme by submitting their ready-to-use digital solutions, proven to deliver productivity gains to SMEs. IMDA is the agency appointed to pre-approve the pre-scoped digital solutions covered the PSG grant scheme.

Figure 44: Tech vendor pre-approval process[110]



[110] Source: Infocomm Media Development Authority (IMDA) website.

Infocomm Media (ICM) vendors are first required to download and complete the Vendor Self-Assessment Checklist for the following sectors to determine if their digital solutions are eligible for pre-approval under SMEs Go Digital:

- Generic solutions (applicable to all sectors)
- Accountancy sector solutions
- Environmental services sector solutions
- Food services sector solutions
- Logistics sector solutions
- Retail sector solutions
- Security sector solutions
- Tourism sector solutions
- Wholesale sector solutions

The assessment is comprehensive, encompassing a number of different dimensions, such as a description of the company and the solution, eligibility criteria, a cybersecurity risk assessment, personal data protection requirements, data analytics and internet of things requirements.

In addition to the self-assessment questionnaire, the package to be submitted by the vendor to IMDA for pre-approval under SMEs Go Digital includes:

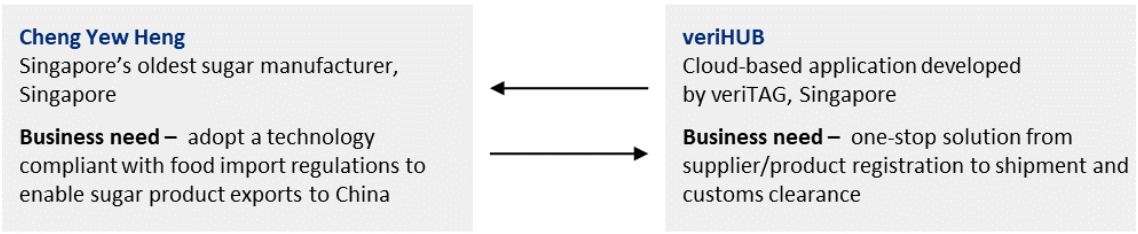
- Solution brochure
- Latest financial statement (to demonstrate positive net equity)
- Supporting documents from five satisfied local small and medium enterprises, including the following:
  - Satisfaction survey form (testing whether the solution has helped the five satisfied enterprises achieve at least a 15% increase in productivity per year in their business operation or process, for example savings in manpower, time, processes or costs or an increase in revenue, turnover, customers, etc.)
  - Invoice of the proposed solution
- Letters of interest for the proposed solutions received from five additional small and medium enterprises
- Proposal on how the solution provider would manage and administer resources for mass deployment to small and medium enterprises (resources to implement multiple projects at any point in time, support for pre-sales and post-implementation, etc.)

IMDA will then approve or deny the approval under the grant scheme. The selection criteria focus on functionalities, meeting SMEs' requirements, the solutions' ease of use, pricing, affordability and ICM suppliers' capability and capacity. Moving forward, beyond typical requirements to enhance productivity and drive transformation, digital capabilities such as cybersecurity, data protection, data analytics and interoperability will be considered in pre-approved solutions, which would better enable small and medium enterprises to thrive in the digital economy.

An example of a traditional SME in Singapore adopting digital technologies offered by local startups is provided below.

Figure 455: SMEs go Digital Example — Cheng Yew Heng and veriHUB[111]

Product export with cloud-based tagging and authentication technology



Together with the inventory tracking feature and links to the country's major e-commerce hubs, the company was able to achieve 200% more exports to China due to a faster turnaround in the exporting process

Tan Kiat How, Chief Executive, IMDA

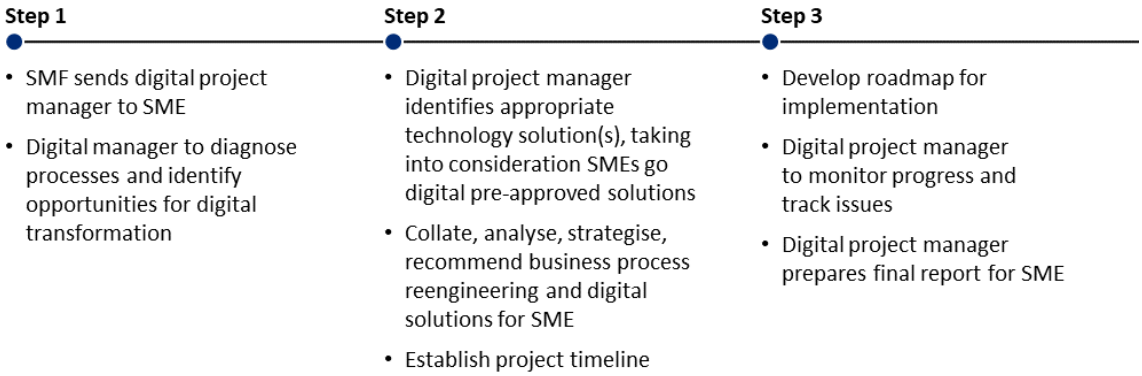
Digital project management services — Deep dive

Small and medium enterprises can engage digital project management services under the SMEs Go Digital programme to help change their business processes, redesign jobs and better manage the implementation of digital technology for a more holistic and sustainable outcome. Those looking to engage digital project management services can receive funding support of up to 70% of the qualifying costs. The Singapore Manufacturing Federation (SMF) has been appointed as the first operator, with support from the National Trades Union Congress, Enterprise Singapore, Infocomm Media Development Authority (IMDA), SkillsFuture Singapore, and Workforce Singapore.

The figure below outlines the methodology for a successful digital transformation through digital project management services. The process starts with the Singapore Manufacturing Federation sending a digital project manager to the company in order to diagnose processes and identify opportunities for digital transformation. At the end, the company receives a final report including the technology solutions identified and an implementation roadmap.

[111] Source: Oliver Wyman analysis based on desktop research, VeriHUB and Cheng Yew websites and public information.

Figure 46: Methodology for digital project management services[112]



These solutions are attractive for small and medium enterprises given that they can access a ready pool of skilled digital project managers, and thereby maximise their business outcomes and achieve a faster digital implementation and sustainable transformation.

3.3.4 Funding available

On top of the productivity solutions grant outlined above, Singapore offers funding for the digitalisation of small and medium enterprises on both the demand side (the companies themselves) and the supply side (trade associations, accelerators or other local partners). On the demand side, small and medium enterprises can get funding from different agencies, such as a loan from one agency and a grant from another agency. Funding is available in various forms (including grants, loans, insurance, tax incentives and investments), depending on the needs and characteristics of the counterpart. This attractive and broad-ranging funding environment contributes to the success of Singapore's small and medium businesses.

Supply side

Singapore offers various grants and tax incentives to trade associations, accelerators and other local partners supporting small and medium enterprises:

- Trade associations and chambers can apply for grants under the LEAD programme to drive the industry upgrade and internationalisation of small and medium enterprises (including in the areas of technology and infrastructure, industry expertise, business collaboration, intelligence and research).[113] Trade associations can also make use of the iMAP grant to bring small and medium businesses on board for overseas missions and trade fairs to access more markets.[114] Between 50% and 90% of eligible costs for qualifying projects are covered by these grants.
- The PACT programme offers grants encouraging mutually beneficial collaborations between companies.[115] The nature of collaboration should go beyond regular business activities (for example capabilities development or joint business development). One enterprise should undertake the role of a leader in driving projects to benefit the group of companies. Support for small and medium enterprises will be capped at 70% and for other companies at 50% of the qualifying costs.
- The Startup SG Accelerator provides grants to incubators and accelerators in strategic growth sectors that take on the role of catalysing growth opportunities for high potential startups through their programmes, mentorship and provision of resources.[116] Moreover, angel investors who can commit a minimum of $100 000 in a qualifying startup can apply to the Angel Investors Tax Deduction (AITD) scheme.

[112] Source: Enterprise Singapore website (https://www.enterprisesg.gov.sg).
[113] Enterprise Singapore website (www.enterprisesg.gov.sg): Local Enterprise and Association Development Programme (LEAD).
[114] Enterprise Singapore website: International Marketing Activities Programme (iMAP).
[115] Enterprise Singapore website: Partnerships for Capability Transformation (PACT).
[116] Startup SG Accelerator website (www.startupsg.gov.sg).

Demand side

Small and medium enterprises can apply to a broad range of financial support programmes, depending on their needs.

For example:

- A variety of loans at favourable conditions are available to small and medium enterprises in Singapore, including the SME Micro Loan, SME Working Capital Loan, SME Venture Loan and SME Equipment and Factory Loan. For example, the SME Venture Loan is targeted at fast-growing and innovative companies that want to expand their operations with venture debt financing of up to $5 million. For that loan, Enterprise Singapore shares 50% of the risk of loan defaults with participating financial institutions in the event of company insolvency, with interest rates, repayment structures, collateral and warrant structures being determined by these institutions.
- Companies (including small and medium companies) can claim 200% tax deduction on eligible costs of overseas market expansion, development and internationalisation.
- The Singapore government co-invests with the private sector in promising companies, ranging from startups to larger companies. For example, Startup SG Equity is a public-private co-investment scheme in tech startups with strong intellectual property and global potential. EDBI is a government-linked fund that invests in promising companies across diverse industries such as advanced manufacturing, consumer, emerging technologies, healthcare, ICT and logistics.

3.4. A nationwide digital strategy

3.4.1 Strategy for Denmark's digital growth

In 2018, the Danish government launched a comprehensive plan to become a digital frontrunner within the next seven years. The plan outlines digital solutions and incentives to benefit companies, individuals and society in general. It consists of 38 initiatives and more than DKK 1 billion (€135 million) to be spent from 2018 to 2025. After 2025, the Danish government has promised to spend more than DKK 75 million (€10 million) to continue supporting these initiatives. The strategy is a joint vision of the Danish government, different business sectors and trade associations, and social partners.

As stated on the government's website and the European Union's Digital Skills and Job Platform, the objectives of the programme are as follows:[117]

- Working towards improving the digital skills of children from an early age by testing a new subject on technology in primary and lower secondary education classes.
- Bridging the skills mismatch and offering relevant training and skills to support individuals' development in the current and future labour market. Activities launched within this context aim to increase employment levels and satisfaction and encourage the development of more digital talents in the STEM field (science, technology, engineering and mathematics).
- Improving access to skills training and programmes for small and medium-sized enterprises and enabling them to exploit the commercial potential of new and emerging technologies.

[117] https://digital-skills-jobs.europa.eu/en/actions/national-initiatives/national-strategies/denmark-digital-growth-strategy-2025

The programme is focused on changing the culture and education of people at different stages of life and in different roles (children, higher education students and workers) with a lot of specific activities focused on training, teaching and testing digital skills, for example:

- A test programme to improve technological understanding in primary and lower secondary education
- The creation of a centre for the application of IT in teaching in vocational education, to place a greater focus on digital skills in final examinations for vocational education
- A proposal for a digital strategy for higher education
- An action plan to attract more graduates to higher education programmes in STEM
- Promoting increased use of satellite-based data in higher education

Figure 47: Denmark's digital growth initiatives[118]

Main initiatives of the strategy of Denmark's digital growth

Digital Hub Denmark

Danish companies need easier access to digital skills. The government will establish Digital Hub Denmark by connecting the growing ecosystem of digital frontrunners. Digital Hub Denmark will, among other things, establish a matching platform to improve companies' access to talent within emerging digital technologies.

Agile regulation for new business models

The technological advancement is fast and regulation has to keep up with our new reality. If not, Danish companies risk missing out on key opportunities. That is why our regulation has to become more agile so companies will have the opportunity to test new business models deriving from the technological transformation.

Strengthened cyber security in companies

Digital transformation requires digital trust. Therefore, the Danish government will strengthen cyber security by establishing an information portal for cyber security and a digital solution for companies to report cyber security incidents and safety breaches of personal data.

The Technology Pact

To meet the rising demand for digital and technological skills, the government will establish a Technology Pact in cooperation with the business industry and educational institutions. The aim of the Technology Pact is to make more people choose a digital or technical education.

SME:Digital

Danish small and medium-sized enterprises need a lift. With the initiative SME:Digital, the government will provide advisory services to help them find digital opportunities, such as in data analysis, e-commerce and digital design.

Strengthened computational thinking in elementary school

Everyone should be able to reap the benefits of the digital transformation. The government will improve the digital and technological competencies of Danish citizens by testing a new subject in elementary schools.

Data as a driver of growth

The government will provide and display more public data and create clearer guidelines for Danish companies to increase their data usage.

[118] Source: Based on the Danish government's website, Ministry of Industry, Business and Financial Affairs: https://eng.em.dk/media/10554/digital-strategy-fact-sheet.pdf.

This programme was launched in 2018 and since then Denmark has continued to push the digitalisation of its economy.

- One example is the allocation of NextGenerationEU funds to help boost the digitalisation process; the Danish government, in line with the instructions given by the European Commission and with what other European countries are doing, has dedicated 25% of its recovery and resilience plan funds to digitalisation. One example of the use of the funds under the plan is the SME digital support scheme launched by the Danish authorities. This is expected to help small and medium companies overcome barriers to investing and using new and advanced technology and e-commerce solutions through the new digital strategy. "With a budget of €8.7 million, the measure will support at least 550 SMEs by the end of 2023 in an effort of scaling-up a proven successful scheme."[119] The Danish government has stated that the plan complements the existing digitalisation agenda, and attempts to avoid different plans going in different directions and ensure that there is minimum overlap across public plans.
- Another interesting example from Denmark is the group of experts gathered by the Danish government to assess digital transformation. In 2021, the Danish government digitalisation partnership discussed how Denmark could use and incentivise future technological opportunities in corporates and public services. The partnership concluded its work in October 2021 by issuing 46 recommendations to the Danish government, which is now analysing them and will implement them in its digitalisation process, again complementing existing digital agendas.

[119] https://ec.europa.eu/info/business-economy-euro/recovery-coronavirus/recovery-and-resilience-facility/denmarks-recovery-and-resilience-plan_en

4. RECOMMENDATIONS

The assessment of the status of SME digitalisation and its financing in Spain, in combination with best practices worldwide, has highlighted the potential for improvements in the existing landscape. This study has shortlisted improvement opportunities that can be grouped into four main blocks.

4.1. Define a national SME digitalisation strategy

The digitalisation of Spanish small and medium enterprises is high on the Spanish government's agenda, as demonstrated by the launch of several ambitious programmes in recent years. These efforts need to continue in the coming years, with a simplified and consolidated path towards digitalisation, redefining some of the current measures/agendas for a programme that lasts after NextGenerationEU funds come to an end and that incorporates every relevant public and private stakeholder.

As mentioned, Spain currently has several digitalisation strategies containing an accurate analysis of the different problems that small and medium enterprises face and insightful prioritised initiatives.

- In the Digital Agenda 2025 (Agenda digital 2025), one of the ten main action points is directly focused on accelerating the digital transformation of companies.
- The Digital Toolkit (Kit Digital) is an extremely ambitious initiative both in terms of scope and budget.

However, there is still no consolidated plan across the public sector (national and regional governments) and some of the plans are due to specific circumstances (the Digital Toolkit is backed by EU funds as part of the recovery from the COVID-19 crisis). Our recommendation to Spanish public authorities would be to:

- Continue the focus and strategic roadmap they have started on the digitalisation of small and medium enterprises, consolidating different existing initiatives.
- Involve all levels of public administration to ensure the goal is achieved efficiently and effectively:
  - Given that digitalisation competencies are distributed across different agents: national government (Ministry of Economic Affairs and Digital Transformation, Ministry of Industry, Commerce and Tourism), autonomous regions and local entities (provincial authorities (diputaciones) and local councils (ayuntamientos);
  - Given that there are many financial instruments that can complement each other to ensure the objectives are met; for example, in addition to the national and regional budget, there is the European Commission budget and European Investment Bank initiatives and financing instruments (via the European Investment Fund (EIF)).

- Involve private stakeholders and other civil society institutions in defining the national plan to ensure proper adoption by Spanish small and medium enterprises:
  - Business associations and representatives (SME representatives such as CEPYME, or CEOE for larger companies) covering the demand side of digitalisation
  - Unions so they can inform workers of some parts of the plan (training, culture)
  - Digital service providers, telcos, etc. covering the supply side of digitalisation
  - Financial institutions, in order to inform and coordinate public-private digitalisation plans
  - Other institutions: academic institutions and foundations in charge of spreading knowledge, to gather expert input on the plan.
- Estimate the investments needed for each of the actions, how much is required from each stakeholder (private/public spending) and when this should be done.
- Define clear success/impact key performance indicators, evolving from current programme participation and aggregated ratios to more granular digitalisation ratios.

Box 6: Digitalisation support office networks in Spain

The current public offering to support SME digitalisation includes physical offices that aim to help small and medium enterprises in this process (see examples below). A unique national strategy for SME digitalisation should aim for better coordination and efficiency among these institutions.

- **Acelera Pyme — Ministry of Economic Affairs and Digital Transformation**: This portal was created with the aim of boosting the digital transformation of small and medium enterprises and self-employed people to promote their growth and improve their competitiveness. It provides access to new analysis tools and content that enable them to advance in their development and the technological transformation of their processes. The Acelera Pyme network will be used to support small and medium enterprises in their adoption of the Kit Digital.
- **Chambers of commerce (Cámaras de Comercio):** The network of the different chambers of commerce aims to help the private sector become more professional and to help people and institutions get closer to the private sector, thus fostering partnerships. There are more than 80 physical offices across Spain.
- **Enterprise Europe Network — European Commission:** The Enterprise Europe Network helps businesses bring innovative ideas to commercial success on international markets. Network experts are there to assess which services are best suited to the specific development phase of your business. At an entry level, network services include information on innovation-related policies, legislation and support programmes, links with local innovation stakeholders, and information about access to local sources of funding/support. In the second stage, experts provide one-to-one services in the form of advice on intellectual property, technology and innovation services and support in accessing funding programmes. The next level of network services is specifically designed to support potentially innovative businesses that are struggling with innovation management. These services help businesses plan and manage their innovation activities and align their innovation strategy with other business processes. They do not have local offices but rather partnerships with local institutions: chambers of commerce, business associations, public-private institutions, etc.
- **SPRI**: This is the entity of the Economic Development, Sustainability and Environment Department of the Basque government for promoting Basque industry and helping the private sector in its digital transformation. This is an example of a regional department (each of Spain's autonomous regions has one) that has a physical office, experts, grants, financial programmes, etc.

4.2. Launch an integrated online matching platform for SMEs

The second block of recommendations is focused on developing what the government currently has on the Kit Digital website: an integrated online platform that will help small and medium enterprises to understand where they are in the digitalisation process, find the appropriate digitalisation package to suit their needs, and even access financial support for their digital transformation. This platform should not be limited to the COVID crisis or related funds, but rather become a permanent tool for Spanish small businesses. It should provide a single source for all information related to the digitalisation process, as well as other modules related to employee capabilities and SME corporate culture (such as offering different courses to help SME employees reskill and upskill).

Spanish public authorities have launched several platforms covering the digitalisation needs of small and medium enterprises. Most of them have been created to fulfil different goals and depend on different public administrations. For example, in addition to ad hoc platforms deriving from NextGenerationEU funds such as the Kit Digital, the following platforms exist:

- **Enisa**, created by the Ministry of Industry, Commerce and Tourism and focused on financing new projects/companies
- **Ipyme**, created as a repository of information and tools from different administrations to start a new company, also owned by the Ministry of Industry, Commerce and Tourism
- **Red.es**, created by the Ministry of Economic Affairs and Digital Transformation and focused on the digital transformation of society (includes individuals and corporates)
- **Acelera Pyme**, which has a broader scope than Kit Digital and is focused on the digital transformation of small and medium enterprises as a repository of resources
- **PAE** (Punto de Atención al Emprendedor/Entrepreneur information point), focused on providing on-site guidance to entrepreneurs. Along with the **CIRCE** platform for creating a new company online, it provides certain incentives to start a new digital business. Both PAE and CIRCE are owned by the Ministry of Industry, plus many others.

And this is only at a national level; autonomous regions and even local authorities sometimes have their own platforms/portals that cover most or some aspects of SME digitalisation. It would be beneficial for the final user (small and medium enterprises) to restructure the architecture of the different portals/platforms into a simpler and, if possible, single platform that provides companies with information, resources and tools for their digital transformation.

The platform should have at least three modules to ensure that small and medium enterprises can find everything in the same place:

- **Self-assessment and guidance module**, which provides businesses with the resources they need to understand where they stand and what they need to do to become more digital. Specifically, this module:
  - Includes a welcome pack/screen to make it easier for businesses to understand and navigate the platform. The customer experience is more important than ever when first using the platform to diminish churn rate. The first screen should explain in detail and using examples the different tools that appear on the screen, how to navigate the platform, and the information that will be asked.
  - Provides, via a self-assessment survey, a diagnostic for digital maturity assessment; this should include rapid benchmarking (ranking within the sector) and automated recommendations. This self-assessment will be adapted according to the size and sector of the company (smaller companies with no departments and usually simpler business models and organisation charts do not need to fill in complex surveys to understand their level of digitalisation).
  - Offers further ad hoc coaching/advisory for businesses to understand what technology to use and a clear reason and objective for using it. It is important that the companies always have a support team at their

disposal; this will be a contact tool for an advisor to guide them and resolve any doubts throughout the process. It should be a results-oriented platform, so that businesses can make the benefits of digitalisation "tangible." For example, the Singaporean CTO-as-a-service module on the SME digitalisation platform is a good example of coaching/accompaniment in the digitalisation process.

- Includes a library/repository of the different existing tools/technologies/packages/"digitalisers" to help them in their digitalisation process; additionally, it should include success stories to make the digitalisation case more tangible.

Table 7: Illustrative example of the information tool pre-self-assessment[120]

Interface	• Easy-to-use online tool (consolidating all available service offers by IT suppliers) • Desktop, tablet and mobile versions • Success stories of projects or SMEs that illustrate instruments' usage
Data fields	• SME information (industry, sector, size, turnover, international coverage) • Technology already used (customer relationship management, software, etc.) • Technology needs not already covered • Eligibility criteria based on previous responses • Price ranges (based on observed market practice)
Data providers	• Public agencies • Market database for price ranges
Functionalities	• Filters by needs (customer relationship management, ERP, stock control) • Compare and contrast (across five different tools that match SMEs' needs) • Downloadable application forms and/or checklists for instruments where applicable • Short interactive questionnaire to filter most appropriate solutions (linking to self-assessment tool and advisory) • Online chat or chatbot for small doubts • Educational materials to support navigation (how specific products work, videos, trials, examples) • Alerts and information as landscape evolves (alerts for instrument eligibility, alerts for when lines are fully utilised and close, alerts for upcoming instruments, comparisons)

- **Pre-curated solutions matching module**, which provides digitalisation packages adapted to business needs. Specifically, this module:
  - Connects small and medium enterprises with pre-approved digitalisation packages depending on their needs. Digitalisation packages vary by sector and digital maturity (starter digital pack vs. advanced digital solutions).
  - Connects businesses with the "digitalisers" that provide the packages.
  - Connects groups of small businesses to each other:
- SMEs looking for similar digital solutions to help small technical providers achieve scalability;

[120] Source: Oliver Wyman Analysis.

- SMEs with the same digital needs to enable knowledge transfer by creating blogs and events.
  - For example, some ideas that have worked well in other geographies/platforms:
- Ranking of solutions specifically selected for a company: A preset of technological solutions is provided for each of the different needs that the company faces. Each of the tools is ranked depending on their probability of success, based on the algorithm, historical success of the implementation of the same technological solutions in businesses in the same sector and professional's opinion. The company will also be provided with information about each of the tools, and technical assistance to learn about the functionalities with video examples, trials and success stories.
- Provide tech demo: Depending on the vendor/selected solution, the company will be able to test the services by implementing the tools to be hired on a provisional basis in order to see if they meet the conditions and functionalities expected to develop the business activity efficiently.
- **Financing module**, which connects companies with government grants, public development banks and traditional financial institutions. Specifically, this module:
  - Connects small and medium enterprises with government subsidies plus grants that will defray the cost of adoption.
  - Increases the public-private collaboration in financing packages (such as Instituto de Crédito Oficial (ICO) and EIB Group (EIB and EIF) loans, grants, etc.)
  - Connects businesses with banks and other traditional financial institutions that can provide funding for the pre-curated solutions (sometimes jointly with the government grants). Illustrative non-exhaustive list:
- Traditional banking system: The company directly contacts the bank that appears on the platform and is aware of the conditions, terms and credit interest (SMEs can apply for this option).
- Hybrid system: The banking system provides the loan and the government acts as guarantor. A credit institution grants the loan, and the State assumes a percentage of the risk of non-payment of the operation, acting as guarantor for the loan (SMEs can apply for this option).
- Public loan: The State agrees to grant the credit on its own conditions and terms (SMEs can apply for this option).
  - Explains and promotes fiscal incentives designed by the government for small businesses who invest in digitalisation projects.
  - Provides information about other types of financing in addition to government aid/grants and traditional financing, such as alternative equity vehicles or venture capital (not the focus for SME digitalisation in most cases, but an option for certain small businesses).
  - Gathers data from businesses to monitor SME financial needs (e.g. leverage ratios) and provide information about financing options and basic SME financial positioning.

Table 8: Illustrative example of the requirements for the finance matching tool[121]

Description	• Digital score based on self-assessment, SME data and historical information
Objectives and uses	• Match companies with funding sources (public or private options) • Ensure a funding source for a project if assessment is positive • Establish connections between companies and investors (venture capitalists, business angels)
Target IT Suppliers	• Based on self-assessment of technological needs • Based on recurrent tools used by other companies in the same sector • Depending on company technology requests
Communication and distribution	• Designed and managed by a central neutral entity with no conflicts of interest as regards to each financing transaction
Main steps required for implemen-tation	• Define methodology and target dataset for both IT suppliers and SMEs (e.g. using available data for modelling and back-testing, and validating outcomes with focus and expert groups) • Design functional requirements for data utility • Define inter-agency cooperation frameworks and data-sharing protocols so relevant data can be pooled across sources • Define data protection, confidentiality, and access rights • Define governance arrangements • Establish an IT platform to pool data across sources • Define usage and implementation across relevant stakeholders
Investment required	• High investment required (upfront and ongoing) • Medium risk but high impact • Different public financing programmes compatible with the type of investment needed

All the information generated in the different stages would be stored to generate mappings that would help to better understand the different sectors and industries and their needs and learn from them for future phases. The use of new technologies such as artificial intelligence and big data are essential elements in this phase of the project, as the pre-established settings will be continuously improved for future projects and the control of the information will be greater.

Box 7: Launch of Fond-ICO (public venture capital) — Ministry of Economic Affairs and Digital Transformation

An example of public-private collaboration is Fond-ICO/Fond-ICO Global[1], the Spanish fund of funds under Instituto de Crédito Oficial (ICO) managed by the public firm AXIS, which has announced that it will be extending an additional €300 million to Spanish venture capital firms in an effort to promote the local investment industry.

With this additional capital, Fond-ICO Global's current size stands at €1.5 billion, and it will continue with its strategy of replicating public-private efforts such as Yozma in Israel. So far, Fond-ICO has allocated €876 million to Spanish venture capital firms in the areas of growth, venture and incubation. In its fifth call, which has just been announced, the fund of funds provided venture and incubation firms with €121 million in total.

[121] Source: Oliver Wyman Analysis.

In September 2021, Spanish national development bank ICO launched the largest call for Fond-ICO Global to boost investment in the growth of Spanish companies.

- This is the 14th Fond-ICO Global call, known as "Consolida," with €750 million, the largest volume since the creation of this instrument.
- Consolida will select a total of 15 funds in the following categories:
  - Technology transfer and incubation
  - Venture capital
  - Expansion
- With the aim of boosting the growth of Spanish companies in public-private partnerships, both the investment amounts and the maximum participation of Fond-ICO Global have been increased, which may represent up to 49% of the size of the selected funds in all categories.
- The funds must invest mostly in Spain (in the expansion category this requirement goes up to 70%), which will be a major catalyst for resources earmarked for the development of entrepreneurship and business growth.
- The incubation and technology transfer categories are grouped together, thus increasing the flexibility and breadth of competition in the early-stage investment categories.
- It will promote, on the basis of public-private partnerships, the creation of larger funds, which will have a greater capacity to invest in and boost Spanish entrepreneurial activity.

4.3. Attract and develop new talent

The third pillar of our set of recommendations focuses on attracting talent to small and medium enterprises, training/reskilling, and developing new talent.

- In the short term, attract existing talent with digital capabilities to small and medium enterprises.
  - Include a tech talent module in the SME digitalisation platform:
- Helps companies find candidates with specific technical capabilities.
- Enhances the value of digital talent, connects digital graduates with jobs and promotes this type of career. At the same time, positive synergies would be generated with the various existing entities such as universities, job search centres, unemployment offices or networks of chambers of commerce that have local knowledge.
  - Launch partnerships between job platforms (public such as SEPE, and private such as Jobandtalent, LinkedIn, Adecco, Randstad, etc.), the government and business associations to make working at small and medium enterprises attractive for digital native individuals.
- In the medium term, upskill and reskill, and develop new talent. Provide SME employees with courses to gain the necessary skills for their digitalisation.
  - Provide online courses on digitalisation topics for SME employees to gain the necessary skills to implement digital solutions in their company, such as programming skills, digital concepts and technologies. This layer of the tool would enable the creation of courses to train professionals on a continuous basis. The courses could be offered by both private companies and public entities.
  - Create open blogs to share knowledge between them. In this space the members of the community could interact and exchange knowledge, optimising the possibilities of success based on different past experiences.
  - Launch education programmes for ICT skills, giving special focus to gender equality (minimising the gender gap in technical degrees), with programmes supported by the government.

- Launch training courses (either self-development or via vendors) for non-digital native generations; provide training courses for older generations with no IT knowledge to be reinserted in the job market at a competitive level.
- Rely on existing national and European public funding instruments to accelerate short, medium and long-term programmes dedicated to the training and education of the workforce; for example, EIB financing via the EIF Skills & Education Guarantee Pilot (S&E Pilot), a new debt financing initiative dedicated to stimulating investments in education, training, and skills.

- In the long term, include digital literacy in education to prepare the next generation for digitalisation challenges.
  - Include digital literacy courses in the education system, for example promoting coding subjects and projects in the mandatory curriculum. In other countries, coding is already a reality. Understanding computers and learning the basics of coding helps children to develop an appreciation of how things work. It also teaches them how software engineers use maths in order to solve problems in a logical and creative way. Learning to code gives children the chance to learn mathematical skills while they are still young, so it is usually easier.
  - Additionally, "digitalising" education also helps to reduce digital illiteracy among the population, reducing the knowledge gap among future SME workers. Some of the tools/programmes are currently being tested in many educational centres: computer-based reading programmes, computer-based testing, digital calculators, smartboards and clickers, generic learning management systems, etc.
  - **Increasing the variety and range of digital-related degrees** at universities. Facilitating students' access to IT studies would increase the number of IT professionals, reducing the gap between needs and the supply of human capital, which has been highlighted as one of the main constraints in terms of the digital development of small and medium enterprises. Some countries are starting digital/IT specialisations at school, with secondary school programmes dedicated to IT, digital and information management
  - Improving public and private grants for students in need to enrol in a digital course/degree, ensuring equal access to digital-related degrees for all students regardless of their economic background.
- For example, the Spanish government has passed a decree increasing the amount of the basic scholarship for basic vocational training from €300 to €350.[122] (The basic scholarship is the one received by non-university students who do not obtain an income-based scholarship). For some specific vulnerable sectors, the amount is higher or the taxes are lower. These incentives could be expanded to cover digital degrees.
  - **Promoting activities to enhance women's participation in digital careers**. Reducing the gender gap in IT degrees is fundamental in order to reduce the digital gap and promote full inclusion. Seven out of ten Spanish companies with technology and digitalisation specialists do not have any female specialists in the field.
  - **Training courses for non-digital native generations**. Providing training courses for older generations with no IT knowledge to be reinserted in the job market at a competitive level.

[122] https://www.educacionyfp.gob.es/prensa/actualidad/2021/06/20210629-rdbecas.html

4.4. Enhance the role of government in SME digitalisation

The fourth and last pillar of recommendations deals with how to enhance the role of government to help small and medium enterprises in their digital transformation process, improve government spending and the use of funds, and create fiscal incentives to encourage small businesses to begin the process.

Some of the proposed measures:

- Prioritise government spending on SME digitalisation needs:
  - Increase targeted investment in SME digitalisation:
    - Launch an SME digitalisation platform to provide digital packages to businesses in need (see pillar 2 of the recommendations).
    - Launch public grants and subsidies to reduce barriers to SME digital transformation (see pillar 2).
    - Support companies investing in intangibles related to digitalisation and automation (HR skills, sustainability and green transformation through automation and digitalisation, gender equality, etc.).
    - Engage with private companies, academic institutions and other organisations to support and promote the capacity of innovation of small and medium enterprises (sponsor events, search for and develop talent, find best-in-class businesses via prizes, etc.).
    - Support the roles of digitalisation and innovation hubs and incubators.
    - Increase targeted investment in SME digitalisation enablers (accelerators, technological centres, etc.).
    - Increase investment in R&D.
    - Improve the impact measurement of public programmes.
  - Target funds at the most vulnerable groups: self-employed people and microenterprises, specific sectors (such as food services and tourism).
  - Complement government spending with supranational institution financing tools (such as EIB financing).
- Include SME digitalisation in government procurement processes:
  - Include digitalisation requirements in the requests for proposals launched by public authorities while increasing buying from small and medium enterprises (which will thus have more incentive to become digital.) The active participation of governments in the purchase and use of services of more digital small and medium enterprises and/or the purchase of technologies created by them would improve the digital ecosystem by encouraging the creation, development and commercialisation of digital products and services by the SME business community.
  - Include minimum thresholds for digital SME participation in programmes sponsored with public money.
- Ensure a facilitating regulatory framework and incentives for SME digitalisation:
  - Launch legal reforms to include incentives to become more digital in the regulatory framework (such as promoting digital data-sharing procedures, paying taxes electronically, having a digital identity/signature).
  - Improve new regulatory incentives for the creation of digital companies (such as the Spanish laws on business creation and growth (Ley Crea y Crece) and on startups (Ley de Startups)). For example, the recently passed Crea y Crece bill (see below) makes the creation of a company faster, with less bureaucratic hurdles; additionally, it gives some fiscal incentives for certain innovative/technological new companies — this is a step in the right direction that we think should be developed further.
  - Give incentives to innovative corporate projects or research, encouraging the creation of new digital companies, the digitalisation of existing ones, and investment in R&D (as seen in Figure 33 above, Spain lags behind in R&D investment compared to the EU average and its peers).
- Ensure coordination among the different public administrations. One of the main objectives of this plan is to avoid the duplication of services. Very good coordination between the various public entities is therefore necessary in order to maximise efficiency. At the same time, it is necessary to simplify the process linking

small and medium enterprises and the public administration with the different stakeholders involved in the value generation process. This will help to improve the digitalisation processes of small businesses in Spain. The strategy to do so is as follows:

- Foster coordination figures.
- Create a similar entity to the CDTI (Centre for the Development of Industrial Technology) for small and microcompanies — a single institution for all would be the best solution.
- Include one-stop shops across public administration entities for small and medium enterprises consolidating overlapping services in one place. As mentioned, simplifying the relationship model between small and medium enterprises and the public administration has been highlighted as one of the key points in this process.
- Promote and provide information about the complementary nature of public funding/incentives in the digitalisation process: for example, NextGenerationEU funds usually cover one part of the process — national government subsidies via the Digital Toolkit can be combined with loans from the ICO or support from the EIF to finance the rest of the digitalisation project.

Box 8: *Crea y Crece* bill in force since December 2021 (pending parliamentary approval)

The current Spanish toolkit for small and medium enterprises includes several initiatives that facilitate the setting up of a company, simplifying traditional processes.

This bill aims to boost productive investment, innovation and the modernisation of companies, with regulatory reforms to improve the business climate and promote entrepreneurship throughout the country.

It is part of component 13, which aims to boost small and medium enterprises, of the recovery and resilience plan. The most important aspects are the following:

- It will be possible to create a limited liability company with a share capital of only one euro, as opposed to the current €3 000. Reforms have also been introduced to facilitate the quick, agile and electronic incorporation of limited liability companies, through the Information Centre and Business Creation Network.
- The use of electronic invoicing in transactions between companies and self-employed workers is promoted as a business digitalisation measure and as a mechanism to fight against late payment in commercial transactions.
- There are incentives to reduce commercial delinquency, including the average payment period as a requirement for access to subsidies and as a cause for termination and a penalising condition in public procurement.
- Cooperation and mutual trust between the different public administrations is strengthened and the window for complaint if companies believe that the administration has not complied with the principles of good economic regulation are reinforced.
- The catalogue of economic activities exempt from licensing is extended, incorporating those activities that were previously deemed legally harmless by at least one autonomous community in the state list.
- The specific instruments for financing business growth are reinforced, making alternative financing mechanisms such as crowdfunding, collective investment and venture capital more flexible.

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