



Digital Economy and Society Index (DESI) 2020

Spain

About the DESI

The European Commission has been monitoring Member States' digital progress through the Digital Economy and Society Index (DESI) reports since 2014. The DESI reports include both country profiles and thematic chapters. In addition, an in-depth telecoms chapter is annexed to the reports for each Member State.

The DESI country reports combine quantitative evidence from the DESI indicators across the five dimensions of the index with country-specific policy insights and best practices.

The current COVID-19 pandemic has shown how important digital assets have become to our economies and how networks and connectivity, data, AI and supercomputing as well as basic and advanced digital skills sustain our economies and societies by allowing work to continue, tracking the spread of the virus and accelerating the search for medications and vaccines.

Member States have put in place specific measures to mitigate the impact of the pandemic. A dedicated section in each country details them. Digital will also play a key role in the economic recovery as the European Council and the Commission have undertaken to frame the support to the recovery along the twin transition to a climate neutral and resilient digital transformation. In this framework, the deployment of 5G and very high capacity networks (VHCNs), digital skills, the digitisation of companies and the public administration are crucial for a robust recovery. The DESI monitors their progress in each Member State.

As regards the thematic chapters, the DESI 2020 report includes a European-level analysis of broadband connectivity, digital skills, use of the internet, digitisation of businesses, digital public services, emerging technologies, cyber security, the ICT sector and its R&D spending and Member States' use of Horizon 2020 funds.

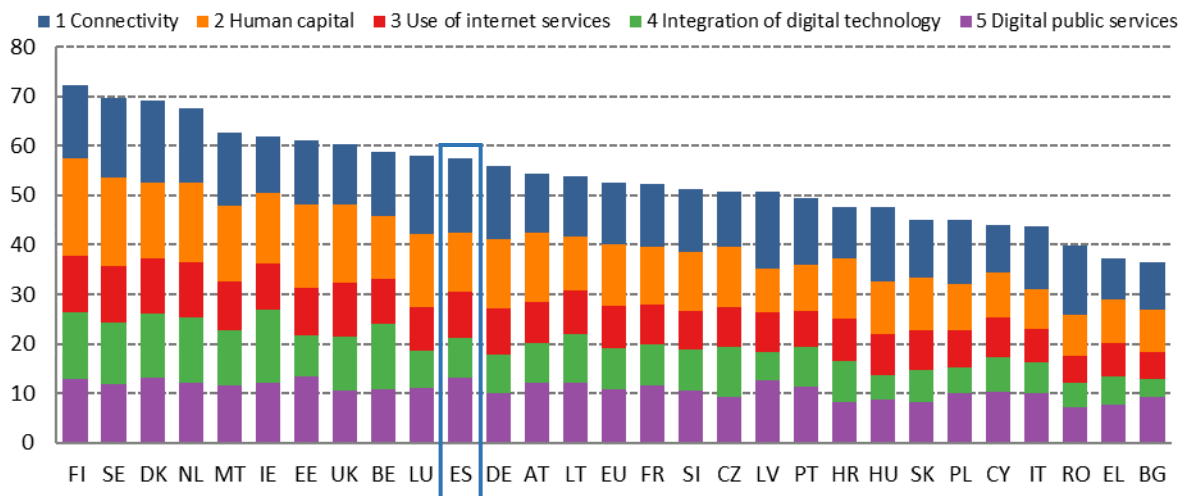
To improve the methodology of the index and take account of the latest technological developments, a number of changes were made to the 2020 edition of DESI, which now includes Fixed very high capacity network (VHCN) coverage. The DESI was re-calculated for all countries for previous years to reflect the changes in the choice of indicators and corrections made to the underlying data. Country scores and rankings may thus have changed compared with previous publications. As the figures refer to 2019, the United Kingdom is still included in the 2020 DESI, and EU averages are calculated for 28 Member States. For further information, please consult the DESI website: <https://ec.europa.eu/digital-single-market/en/desi>.

It is noted that statements regarding planned or potential State aid measures record intentions declared by Member States and do not pre-judge or pre-empt the assessment of such measures by the Commission under the relevant state aid rules. The DESI report is not meant to provide any assessment of the compliance of such measures with state aid rules and procedures.

Overview

	Spain		EU
	rank	score	score
DESI 2020	11	57.5	52.6
DESI 2019	10	53.6	49.4
DESI 2018	10	50.2	46.5

Digital Economy and Society Index (DESI) 2020 ranking



Spain ranks out 11th of 28 EU Member States in the 2020 edition of the Digital Economy and Society Index (DESI) based on data prior to the pandemic. Spain ranks 2nd in the EU on digital public services thanks to its well-timed implementation of a digital-by-default strategy throughout its central public administration. The country performs well also in the area of connectivity. Spain is below the EU average on the human capital indicators. Though it is improving its scores, almost half of the Spanish population still lack basic digital skills and 8% have never used the internet. Spain ranks 13th on integration of digital technologies; its score is in line with the EU average, although Spanish SMEs have yet to fully unlock the potential of e-commerce.

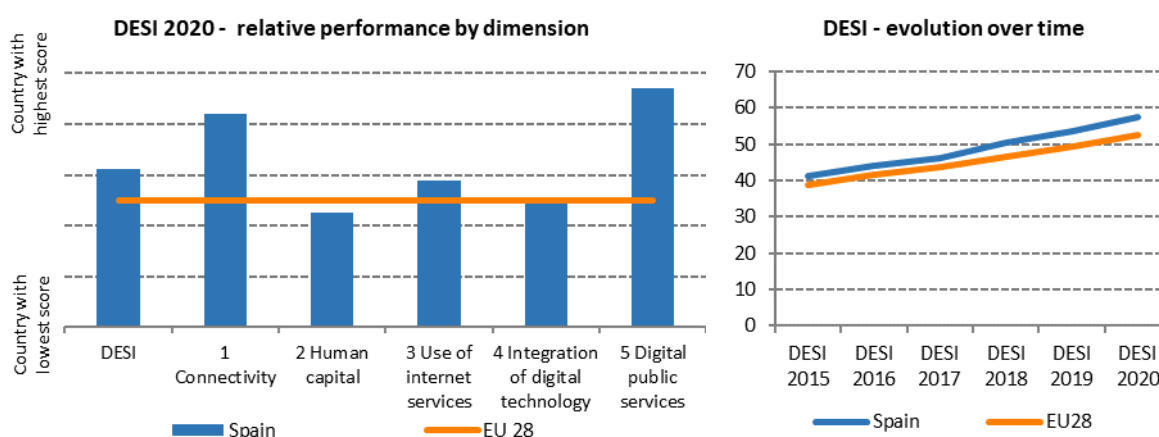
Spain's current digital agenda dates back to 2013. The new coalition government took office in January 2020 and digital affairs are currently under a vice-president in the Ministry for Economic Affairs and Digital Transformation (*Ministerio de Asuntos Economicos y Transformacion digital*). Three state secretaries in that ministry have responsibility for digital matters: one for digitisation and artificial intelligence, a second for telecommunications and digital infrastructure, and a third for Economy and Business Support⁽¹⁾. The government is currently working on a national strategy for digital skills to ensure that all citizens, with a special emphasis on workers, women and the elderly reach the required level of digital skills and have the increasing level of skills needed to conduct their lives and work in today's labour market and society. This strategy is expected to be adopted in summer 2020.

Spain is finalising its national Artificial Intelligence (AI) strategy. In 2019, it published the new 'Strategic framework for SME policy 2030' setting targets for innovation and digitisation. The 2019 'Agenda for

⁽¹⁾<http://www.mineco.gob.es/portal/site/mineco/menuitem.b6c80362d9873d0a91b0240e026041a0/?vgnnextoid=3a4d41617b464610VgnVCM1000001d04140aRCRD>

change towards an inclusive and sustainable economy' aims to promote education, growth, quality employment, innovation and digitisation, adapted to the specific needs of each economic sector.

In March 2019, Spain adopted the digitisation strategy for the agri-food, forestry sector and rural areas, which aims to foster the adoption of digital technologies in the Spanish agro-food and forestry sector. This strategy is currently being implemented at operational level through an action plan, which sets out specific action to take in 2020⁽²⁾. This strategy is closely linked to other plans under the remit of several different ministries, such as the national strategy to address the demographic challenge⁽³⁾, the Spanish strategy for science, technology and innovation 2013-2020⁽⁴⁾, the programme for the extension of next-generation broadband⁽⁵⁾, the national plan for smart territories⁽⁶⁾, and the connected industry 4.0 strategy⁽⁷⁾.



The role of digital to manage the coronavirus pandemic and to support the economic recovery

The current COVID-19 crisis is having an important impact on key societal indicators, relating to the use of internet services by citizens. This does not show in the latest 2019 official statistics as reported in DESI. Consequently, the DESI 2020 findings need to be read in conjunction with the strained demand that has been put on digital infrastructure and services during the pandemic and the immediate actions taken by the Member States. Similarly, as Europe progressively exits from the pandemic, the recovery must be planned taking into account the lessons learnt from this crisis. This means a particular attention to the indicators relevant for a stronger and more resilient digital transformation and economic recovery, notably very high capacity networks (VHCNs) and 5G, digital skills, advanced digital technologies for businesses and digital public services.

Spain implemented several measures in digital to deal with the COVID-19 crisis. Measures were first taken to maintain the provision of the electronic communication services for the population and to ensure these services were running smoothly during the disruption caused by the

⁽²⁾ <https://www.mapa.gob.es/es/ministerio/planes-estrategias/estrategia-digitalizacion-sector-agroalimentario/>

⁽³⁾ <https://www.lamoncloa.gob.es/consejodeministros/Paginas/enlaces/290319-enlace-reto.aspx>

⁽⁴⁾ http://www.ciencia.gob.es/porta/site/MICINN/menuitem.26172fcf4eb029fa6ec7da6901432ea0/?vgnnextoid=1387571a3db06610VgnVCM1000001d04140aRCRD&lang_chosen=es

⁽⁵⁾ <http://www.mincotur.gob.es/PortalAyudas/banda-ancha/Paginas/Index.aspx>

⁽⁶⁾ <https://avancedigital.gob.es/en-us/Novedades/Paginas/plan-nacional-territorios-inteligentes.aspx>

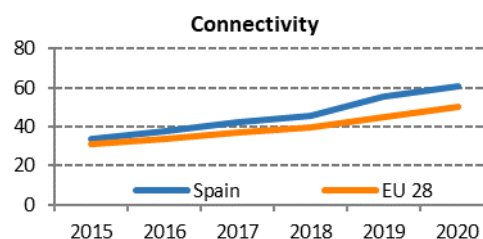
⁽⁷⁾ <https://www.industriaconectada40.gob.es/Paginas/index.aspx>

pandemic. Major telecommunications companies in Spain also pledged to ensure connectivity, networks operation and supervision, as well as to ensure a responsible use of communication service to avoid jeopardizing the integrity of networks. Spain also made an important effort to tackle online misinformation with the national website covid19.gob.es and a chat bot for instant messaging apps with trustworthy information. Development of new digital uses was accelerated with a mobile app for self-diagnosis, an analysis of people's mobility to study the impact of the confinement, and a centralized information system to coordinate the needs for staff or equipment in hospitals. As regards digitisation of businesses, and especially of SMEs, Spain will mobilise in the next two years more than €200 million for the recovery.

Looking forward, as regards the DESI indicators that are especially relevant for the economic recovery after the COVID-19 crisis, Spain is very advanced in the provision of digital public services and performs particularly well in the deployment of Very High Capacity Networks (VHCN). On the other hand, it is generally below EU average in digital skills indicators and has a relatively weak performance in the digitisation of businesses, especially of SMEs.

1 Connectivity

1 Connectivity	Spain		EU
	rank	score	score
DESI 2020	5	60.8	50.1
DESI 2019	5	55.4	44.7
DESI 2018	8	45.9	39.9



	Spain			EU
	DESI 2018	DESI 2019	DESI 2020	DESI 2020
	value	value	value	value
1a1 Overall fixed broadband take-up	73%	77%	78%	78%
% households	2017	2018	2019	2019
1a2 At least 100 Mbps fixed broadband take-up	18%	30%	53%	26%
% households	2017	2018	2019	2019
1b1 Fast broadband (NGA) coverage	85%	88%	90%	86%
% households	2017	2018	2019	2019
1b2 Fixed Very High Capacity Network (VHCN) coverage	71%	77%	89%	44%
% households	2017	2018	2019	2019
1c1 4G coverage	92%	94%	95%	96%
% households (average of operators)	2017	2018	2019	2019
1c2 Mobile broadband take-up	92	96	99	100
Subscriptions per 100 people	2017	2018	2019	2019
1c3 5G readiness	NA	30%	30%	21%
Assigned spectrum as a % of total harmonised 5G spectrum		2019	2020	2020
1d1 Broadband price index	NA	NA	51	64
Score (0 to 100)			2019	2019

Spain's overall connectivity score has further improved but the rank remains 5th in the DESI 2020. The country performs particularly well when it comes to VHCN coverage. The deployment of FTTP networks continues to be an important feature of the Spanish digital market, covering 80% of households, above the EU average of 34%. Despite the significant differences between urban and rural areas, rural FTTP coverage in Spain reaches 46% of households, significantly above the rates of both EU rural and total FTTP coverage (21% and 34% respectively). Thanks to extensive fibre deployment and the upgrade of cable networks to DOCSIS 3.1, VHCN covers 89% of households, 12 percentage points above last year and well above the EU average (44%). NGA networks cover 90% of households, above the EU average (86%). 4G coverage reached 95%, 1 percentage point below the EU average (of 96%). Overall fixed broadband take-up increases 1 percentage point (from 77% in 2018 to 78% in 2019). At least 100 Mbps fixed broadband take-up has grown significantly by 23 percentage points, (from 30% in 2018 to 53% in 2019) well above the EU average (26%). Prices in Spain are higher than the EU average, ranking 25th in DESI, but do not seem correlated to take-up. On the contrary, take-up of at least 100 Mbps networks grew significantly.

The national programme for the extension of next-generation broadband networks (*'Programa de Extensión de la Banda Ancha de Nueva Generación'*, PEBA-NGA⁽⁸⁾), continues to provide financial support for the roll-out of broadband networks in underserved areas. Spain notified to the European

(8) <http://www.mincotur.gob.es/PortalAyudas/banda-ancha/Paginas/Index.aspx>

Commission a modification of its PEBA-NGA €400 million scheme for 2020-2022 to include grey areas, by rolling out infrastructure capable of providing speeds of 300 Mbps symmetrical, upgradeable to 1 Gbps symmetrical. On 10 December 2019, the European Commission declared the new Spanish scheme compatible with EU State Aid rules⁽⁹⁾, ⁽¹⁰⁾. In April 2019, the Government approved the regulation on the functioning of the Single Information Point (SIP)⁽¹¹⁾, and the SIP⁽¹²⁾ is currently operational.

Following the publication of the 5G national plan for 2018-2020, the Ministry of Business Affairs and Digital Transformation (*Secretaria de Estado de Telecomunicaciones e Infraestructuras Digitales, SETID*) guaranteed the possibility of using certain frequency bands for 5G pilots and established the regulatory basis for granting subsidies to 5G technology pilot projects. On that legal basis, Red.es awarded two 5G pilot projects using the 3.6 GHz and 26 GHz bands⁽¹³⁾ in April 2019, and, in October 2019, published a new call for tenders for eleven 5G pilot projects, for a budget of €45 million⁽¹⁴⁾. In Spain, 45% of the spectrum harmonised at EU level for wireless broadband has been assigned. Regarding the 700 MHz band, in June 2019⁽¹⁵⁾ the government approved a new national technical plan for Digital Terrestrial Television (DTT technical plan) as well as the adoption of the necessary regulatory measures for the release of the second digital dividend. In June 2019 SETID published a draft proposal for managing the 700 MHz, 1.5 GHz and 26 MHz bands in which general aspects of the auctions were consulted⁽¹⁶⁾. The 700 MHz band was expected to be awarded in May 2020 but due to COVID-19 pandemic the auction process has been delayed. Spain decreased four positions in the 5G readiness indicator⁽¹⁷⁾ (from 6th to 10th), as it has not assigned any additional spectrum in the 5G pioneer bands.

Spain is one of the top performers in the roll-out of very-high capacity networks as well as the take-up of ultrafast broadband connections of at least 100 Mbps. Deployment is driven by commercial investment made by several telecom operators; a regulatory framework focused on supporting deployments through effective regulated duct-access and geographically differentiated access obligations; and an ambitious national strategy that provides subsidies in sparsely populated and rural areas. The ground is being prepared for 5G deployment, with several pilot projects assigned and under way, with pioneer spectrum assignment well under way and with the 700 MHz auction initially expected in spring 2020⁽¹⁸⁾.

⁽⁹⁾ https://ec.europa.eu/competition/state_aid/cases1/201952/282618_2120578_133_2.pdf

⁽¹⁰⁾ http://www.mineco.gob.es/portal/site/mineco/menuitem.ac30f9268750bd56a0b0240e026041a0/?vgnexto_id=df4985eb8c771710VgnVCM1000001d04140aRCRD&vgnextchannel=864e154527515310VgnVCM1000001d04140aRCRD

⁽¹¹⁾ Order ECE/529/2019, of 26 April 2019, <https://www.boe.es/buscar/doc.php?id=BOE-A-2019-6997>

⁽¹²⁾ <https://sedeaplicaciones.minetur.gob.es/piu>

⁽¹³⁾ <https://www.red.es/redes/es/que-hacemos/pilotos-5g>

⁽¹⁴⁾ <https://www.red.es/redes/es/que-hacemos/pilotos-5g>

⁽¹⁵⁾ <https://www.boe.es/buscar/act.php?id=BOE-A-2019-9513>.

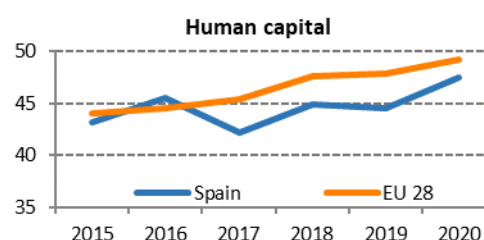
⁽¹⁶⁾ <https://avancedigital.gob.es/en-us/Participacion/Paginas/Cerradas/modelo-gestion-bandas-frecuencias.aspx>

⁽¹⁷⁾ The 5G spectrum readiness indicator is based on the amount of spectrum already assigned and available for 5G use by 2020 within the 5G pioneer bands in each EU Member State. For the 3.4-3.8 GHz band, this means that only licences aligned with the technical conditions in the Annex to Commission Decision (EU)2019/235, are considered 5G-ready. For the 26 GHz band, only assignments aligned with the technical conditions in the Annex to Commission Implementing Decision (EU) 2019/784 are taken into account. By contrast, the percentage of harmonised spectrum takes into account all assignments in all harmonised bands for electronic communications services (including 5G pioneer bands), even if this does not meet the conditions of the 5G readiness indicator.

⁽¹⁸⁾ As a consequence of the Emergency State Declaration because of COVID-19, the foreseen 700 MHz auction has been postponed.

2 Human capital

2 Human capital	Spain		EU
	rank	score	score
DESI 2020	16	47.6	49.3
DESI 2019	17	44.5	47.9
DESI 2018	17	44.9	47.6



	Spain			EU
	DESI 2018	DESI 2019	DESI 2020	DESI 2020
	value	value	value	value
2a1 At least basic digital skills	55%	55%	57%	58%
% individuals	2017	2017	2019	2019
2a2 Above basic digital skills	32%	32%	36%	33%
% individuals	2017	2017	2019	2019
2a3 At least basic software skills	58%	58%	59%	61%
% individuals	2017	2017	2019	2019
2b1 ICT specialists	3.0%	2.9%	3.2%	3.9%
% total employment	2016	2017	2018	2018
2b2 Female ICT specialists	1.0%	1.0%	1.1%	1.4%
% female employment	2016	2017	2018	2018
2b3 ICT graduates	4.0%	3.9%	4.0%	3.6%
% graduates	2015	2016	2017	2017

Spain ranks 16th in the EU on human capital, rising in the ranking since the previous year. Basic digital skill levels remain slightly below the EU average. 43% of people between 16 and 74 years of age lack basic digital skills (against the EU average of 42%). The share of ICT specialists in total employment increased and it is now close to the EU average (3.2% against EU average of 3.9%). The share of ICT graduates in Spain also increased and now accounts for 4% of all graduates. The share of female ICT specialists remains stagnant at a mere 1.1% of total female employment. In 2019, Spain signed the European Declaration on boosting the participation of women in digital⁽¹⁹⁾.

The Ministry for Economic affairs and digital transformation is working on a new digital skills strategy with a six-pillar structure: 1) digital skills for citizenship and inclusion; 2) digital skills for education; 3) digital skills for a sustainable employability; 4) digital skills and SMEs; 5) digital specialists (jobs and productivity); and 6) digital skills and gender. This upcoming digital skills strategy will aim to leverage €4 billion and will require support from the 2020 budget, expected by mid-2020.

The 2019-2022 strategic plan for vocational and educational training adopted in November 2019⁽²⁰⁾ aims to make vocational education and training (VET) more responsive to the needs of the economy - including new digital sectors - and to boost participation in VET programmes, particularly at secondary level. The government plans to create 40 new degrees (both vocational and university level) in different ICT fields (such as 3D printing, industrial data, cybersecurity, big data analytics, automotive and self-driving). The strategy also proposes including a module on 'applied digitisation in the productive sector' in all VET programmes at all levels (basic, intermediate and high). These

⁽¹⁹⁾ <https://ec.europa.eu/digital-single-market/en/news/eu-countries-commit-boost-participation-women-digital>

⁽²⁰⁾ <https://www.lamoncloa.gob.es/consejodeministros/Paginas/enlaces/221119-fp.aspx>

programmes are responding to the increased demand for highly-skilled workers in manufacturing and sales, that need workers advanced digital skills, including workers with a more traditional engineering profile and others with newer skillsets, notably analysts, programmers, web and multimedia designers⁽²¹⁾.

Spain is also running public-private initiatives. For example, the association DigitalES⁽²²⁾ has developed VET curricula for a 5G technician module in partnership with private-sector companies (Ericsson, Nokia, Telefonica and Movistar) included in the VET initiative run by the Ministry of Education.

The government has also prepared several funding initiatives on the digital economy: 1) digital enabling technologies (*tecnologías digitales habilitadoras*); 2) video game push programmes, with co-financing from the European Regional Development Fund (ERDF); 3) digital advisers, with over 1,000 SMEs as beneficiaries; 4) smart cities, with co-financing from ERDF; and finally 4) *Desafía* programme, giving access to 8-10 high-potential digital SMEs to a face-to-face immersion programme in digital world hubs, such as San Francisco (USA), Tel Aviv (Israel) or ShenZen (China).

The Spanish National Coalition for Digital Skills and Jobs, run by AMETIC⁽²³⁾, held the second edition of the digital skills awards in 2019 with several categories, in line with the EU's proposal⁽²⁴⁾. They currently have 19 working parties (*comisiones*) providing input to discussions on digital⁽²⁵⁾. They organised several events in 2019, such as the second conference on AI⁽²⁶⁾ and the annual summit on the digital economy and telecommunications⁽²⁷⁾.

Spain ranked 4th in the 2019 Code Week Initiative⁽²⁸⁾ with 1,615 events organised. 89% of events were held in schools, attracting close to 200,000 participants with an average female participation of 48%.

Spain needs a sufficient number of medium to high-skilled technicians to increase its innovation capacity and ensure a smooth transition to an increasingly digitised economic environment. Increasing its number of specialists by up-skilling and re-skilling, and narrowing the substantial gender gap, will help Spain move at full speed to join the dynamic digital environment and help prepare all Spanish citizens to embrace the benefits of the digital economy.

⁽²¹⁾ *Observatorio nacional de las Telecomunicaciones y para la sociedad de la información.*

<https://www.ontsi.red.es>

⁽²²⁾ <https://www.digitales.es/>

⁽²³⁾ <http://ametic.es/es/proyectos/digital-skills-jobs-coalition>

⁽²⁴⁾ <https://ametic.es/en/prensa/pedro-duque-senala-que-las-companias-espanolas-necesitan-un-entorno-mejor-para-poder-crecer>

⁽²⁵⁾ <https://ametic.es/es/nuestro-trabajo>

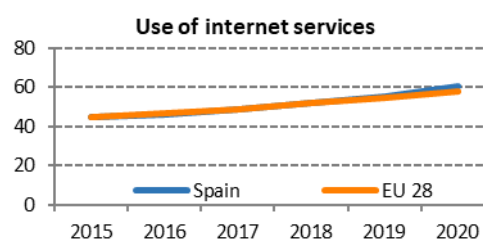
⁽²⁶⁾ <https://ametic.es/es/prensa/la-inteligencia-artificial-cambiara-el-modelo-productivo-de-espana>

⁽²⁷⁾ <https://ametic.es/es/evento/santander>

⁽²⁸⁾ <https://blog.codeweek.eu/post/190418441025/eucodeweek19stats>

3 Use of internet services

3 Use of internet services	Spain		EU
	rank	score	score
DESI 2020	11	60.8	58.0
DESI 2019	13	55.1	55.0
DESI 2018	11	52.1	51.8

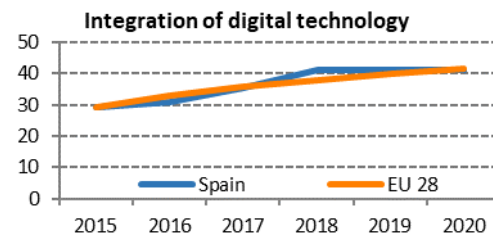


	Spain			EU
	DESI 2018	DESI 2019	DESI 2020	DESI 2020
	value	value	value	value
3a1 People who have never used the internet	14%	13%	8%	9%
% individuals	2017	2018	2019	2019
3a2 Internet users	80%	83%	88%	85%
% individuals	2017	2018	2019	2019
3b1 News	77%	77%	78%	72%
% internet users	2017	2017	2019	2019
3b2 Music, videos and games	83%	86%	86%	81%
% internet users	2016	2018	2018	2018
3b3 Video on demand	27%	39%	39%	31%
% internet users	2016	2018	2018	2018
3b4 Video calls	35%	38%	61%	60%
% internet users	2017	2018	2019	2019
3b5 Social networks	68%	67%	65%	65%
% internet users	2017	2018	2019	2019
3b6 Doing an online course	15%	15%	16%	11%
% internet users	2017	2017	2019	2019
3c1 Banking	55%	57%	60%	66%
% internet users	2017	2018	2019	2019
3c2 Shopping	59%	62%	64%	71%
% internet users	2017	2018	2019	2019
3c3 Selling online	15%	13%	15%	23%
% internet users	2017	2018	2019	2019

Overall, the use of internet services in Spain increased since the previous year, with the country performing above the EU average. People in Spain are keen to carry out a range of online activities in line with the rest of the EU, such as making video calls, reading news online or using social networks. Compared to the EU average, the highest ranked activities are taking online courses and playing music, videos and games online. 60% of Spanish internet users use online banking (against the EU average of 66%). 64% of Spaniards shop online, against the EU average of 71%. 15% of Spanish internet users sell online, below the EU average of 23%. These results may indicate a lower perceived level of trust of the internet, which may be holding back Spanish internet users from drawing the full benefits of online services.

4 Integration of digital technology

4 Integration of digital technology	Spain		EU
	rank	score	score
DESI 2020	13	41.2	41.4
DESI 2019	12	41.3	39.8
DESI 2018	11	41.1	37.8



	Spain			EU
	DESI 2018	DESI 2019	DESI 2020	DESI 2020
	value	value	value	value
4a1 Electronic information sharing	46%	46%	43%	34%
% enterprises	2017	2017	2019	2019
4a2 Social media	28%	28%	29%	25%
% enterprises	2017	2017	2019	2019
4a3 Big data	8%	11%	11%	12%
% enterprises	2016	2018	2018	2018
4a4 Cloud	18%	16%	16%	18%
% enterprises	2017	2018	2018	2018
4b1 SMEs selling online	20%	18%	19%	18%
% SMEs	2017	2018	2019	2019
4b2 e-Commerce turnover	10%	10%	9%	11%
% SME turnover	2017	2018	2019	2019
4b3 Selling online cross-border	7%	7%	7%	8%
% SMEs	2017	2017	2019	2019

On the integration of digital technology, Spain ranks 13th among EU countries. Spanish businesses take advantage of the opportunities presented by digital technologies in line with the EU average. 43% of businesses have an electronic information sharing system in place (against the EU average of 34%) and 11% of Spanish businesses access big data analysis (against 12%). 16% of companies use the cloud (18% in the EU) and almost one third have at least two social media accounts to promote their products and services. 19% of SMEs sell online (slightly above the EU average of 18%), though only 7% of all SMEs sell across borders to other EU countries and 9% of turnover is generated by online sales.

Spain is committed to advancing new digital technologies and to investing strategically in digital technologies through EU-coordinated programmes. The country has two flagship projects on quantum computing funded by the EU: CIViQ⁽²⁹⁾, which aims to provide long-term reliable data privacy and 2D-SIPC⁽³⁰⁾, which aims to explore novel quantum device concepts based on 2D materials.

The Spanish Secretary General for Industry and SMEs (SGIPYME) published in 2019 the 'Strategic framework for SME policy for 2030' setting targets for innovation and digitisation for SMEs.

Regarding emerging technologies, Spain has developed a significant number of coordination measures. The Secretary of State of Digitisation and Artificial Intelligence has created a working group called 'Emerge', composed of all ministries and public bodies, to centralise information on emerging

⁽²⁹⁾ <https://ec.europa.eu/digital-single-market/en/content/civiq-providing-long-term-reliable-data-privacy>

⁽³⁰⁾ <https://ec.europa.eu/digital-single-market/en/content/2dsipc-exploring-novel-quantum-device-concepts-based-2d-materials>

technologies such as blockchain. A new working group is also currently following the European blockchain partnership.

On cybersecurity, Spain currently has 105 competence centres⁽³¹⁾, including the national cybersecurity institute, INCIBE⁽³²⁾. It also has an active cluster of research called RENIC⁽³³⁾ and innovation bodies working on cybersecurity.

To encourage the adoption and expansion of cloud computing technology, the public body 'Red.es' has created a plan to stimulate demand for cloud solutions. The programme to promote cloud solutions for SMEs offers companies financial assistance for a fixed period of nine months to adopt different cloud solutions tailored to their business processes. SMEs and freelancers based in Spain and operating in the ICT sector can apply for this assistance, as long as their turnover is below €50 million. Spain stands to benefit greatly from digital transformation if all SMEs and micro-enterprises see the benefits in their business activities. Measures to include digitisation and embrace AI and other emerging technologies can boost the innovation capacity of the Spanish economy, driven by SMEs.

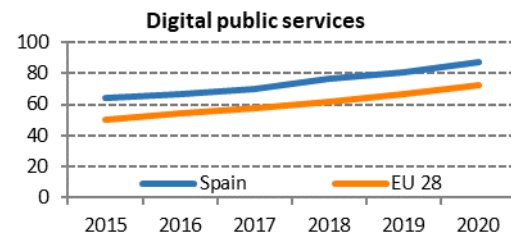
⁽³¹⁾ https://www.incibe.es/red-excelencia-idi-ciberseguridad/estudios_caracterizacion/catalogo-investigacion

⁽³²⁾ <https://www.incibe.es/en>

⁽³³⁾ <https://www.renic.es/en>

5 Digital public services

5 Digital public services	Spain		EU
	rank	score	score
DESI 2020	2	87.3	72.0
DESI 2019	4	80.9	67.0
DESI 2018	4	76.6	61.8



	Spain			EU
	DESI 2018	DESI 2019	DESI 2020	DESI 2020
	value	value	value	value
5a1 e-Government users	67%	76%	82%	67%
% internet users needing to submit forms	2017	2018	2019	2019
5a2 Pre-filled forms	72	74	80	59
Score (0 to 100)	2017	2018	2019	2019
5a3 Online service completion	95	95	96	90
Score (0 to 100)	2017	2018	2019	2019
5a4 Digital public services for businesses	95	93	93	88
Score (0 to 100) - including domestic and cross-border	2017	2018	2019	2019
5a5 Open data	NA	NA	90%	66%
% of maximum score			2019	2019

Spain ranks 2nd in the EU on digital public services, well above the EU average. Spain rose by two positions in the ranking compared to the previous year, worth highlighting. This is the chapter in which the country performs best. Indicators show a high level of online interaction between public authorities, citizens and businesses. Spain performs very well on the open data indicator, ranking 2nd with 90% of the maximum score. 82% of Spanish internet users actively engage with e-government services, 6 percentage points more than the previous year. In 2019, Spain continued to improve its rating on pre-filled forms to reach 80 points, well above the EU average of 59. Spain also scored above the EU average on the availability of e-government services for businesses, with 93 points, ranking 11th. Lastly, Spain scored 96 points on online service completion, ranking 8th in the EU and 6 points above the EU average.

The country's investment in open government data is an example to follow for large EU economies when making the transition to digital-by-default in the central public administration. Over 98% of all services are digital-ready thanks to timely implementation of the ICT strategic plan for 2015-2020 and the use of sufficient funds to develop the IT architecture. Interoperability with sub-national levels of the administration is now key to ensure a smooth transition to regional and local levels and to avoid overlap.

Spain can amplify its good results on e-Government by reaching a consensus between all public administrations in Spain to develop the same digital-by-default interoperable infrastructure. It is of utmost importance to lead the way and show how the digital-by-default strategy can be applied in large EU economies.

Highlight 2020: Spain's cybersecurity strategy

Spain published its national cybersecurity strategy (*Estrategia nacional de ciberseguridad*) on 30 April 2019.

The strategy develops the provisions set out in its 2017 national security strategy (*Estrategia de seguridad nacional*) on cybersecurity.

Building on the experience with the previous cybersecurity strategy from 2013, the new strategy is divided into five chapters:

- 1) Chapter 1 - 'Cyberspace, beyond a common global space' provides an overall understanding of the field of cybersecurity and the rationale for this new strategy.
- 2) Chapter 2 - 'Threats and challenges in cyberspace' examines the main threats and challenges that Spain faces regarding the cyberspace.
- 3) Chapter 3 - 'Purpose, principles and objectives for cybersecurity' translates the governing principles of the 2017 national security strategy into one generic objective and five specific, crosscutting goals (1 - security and resilience; 2 - safe and reliable use of cyberspace against illegal use; 3 - protection of business and social ecosystems; 4 - culture and commitment to cybersecurity and empowerment of human and technological capabilities; 5 - cyberspace in the international arena).
- 4) Chapter 4 - 'Lines of action and measures' sets out a range of action to achieve the objectives.
- 5) Chapter 5 - 'Cybersecurity in the national security framework' sets out how action on cybersecurity will be structured, and led by the Spanish Prime Minister.