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PART 5/62

COMMISSION STAFF WORKING DOCUMENT

Europe's Digital Progress Report 2017

4. Integration of Digital Technology

On **Integration of Digital Technology**, Denmark scored highest, followed by Ireland, Sweden and Belgium. Romania, Bulgaria, Poland and Latvia scored lowest.

EU28	Value 2017	Value 2016
4a1 Electronic Information Sharing % enterprises	36% 2015	36% 2015
4a2 RFID % enterprises	3,9% 2014	3,9% 2014
4a3 Social Media % enterprises	20% ↑ 2016	18% 2015
4a4 eInvoices % enterprises	18% 2016	na 2015
4a5 Cloud % enterprises	13% 2016	na 2015
4b1 SMEs Selling Online % SMEs	17% ↑ 2016	16% 2015
4b2 eCommerce Turnover % SME turnover	9,4% 2016	9,4% 2015
4b3 Selling Online Cross-border % SMEs	7,5% 2015	7,5% 2015

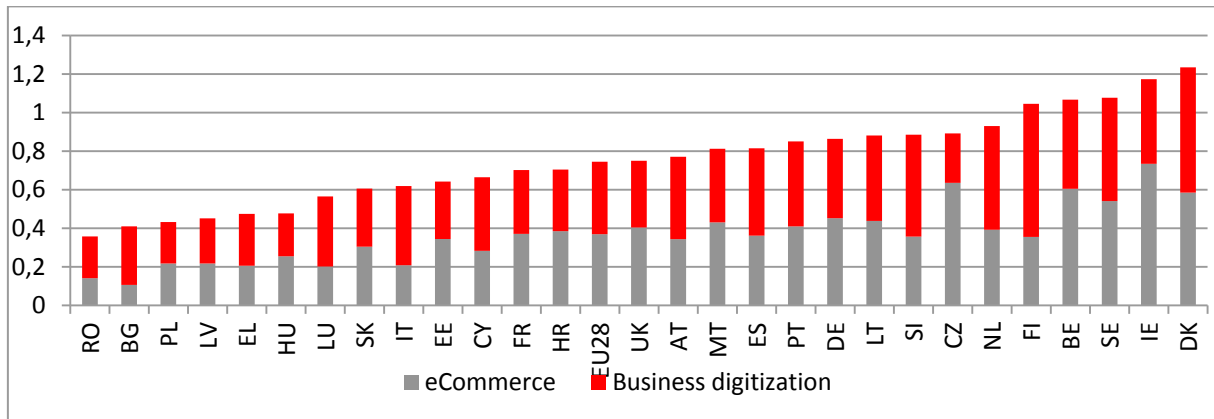
Source: European Commission, Digital Scoreboard based on Eurostat Community survey ICT usage and e-commerce in enterprises

Integration of Digital Technology covers (a) 'business digitisation' and (b) 'eCommerce'. 'Business digitisation' has five indicators (as % of firms using): electronic information sharing, RFID, social media, eInvoices and cloud solutions. eCommerce has three indicators: the percentage of small and medium-sized enterprises (SMEs) selling online, eCommerce turnover as a percentage of total turnover of SMEs, and the percentage of SMEs selling online cross-border. This DESI dimension is used also to measure the Digital Transformation output in the DTM scoreboard¹.

In CZ and IE the driver is eCommerce, whereas the adoption of eBusiness technologies dominate BG, IT, FI and LU performance.

Figure 4.1. DESI2017 scores for the Integration of digital technology

¹ See: http://ec.europa.eu/growth/tools-databases/newsroom/cf/itemdetail.cfm?item_id=9076

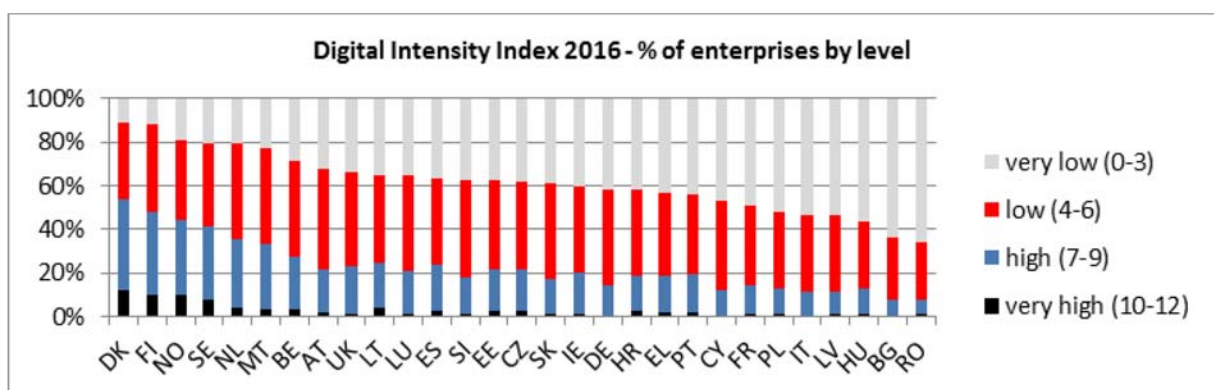


Source: Commission services based on Eurostat Community survey on ICT usage and e-commerce in enterprises

Merely a fifth of companies in the EU-28 is **highly digitised**, but the situation across countries is varied: while half of companies in Denmark are highly digitised, in Bulgaria and Romania it is less than one in ten.

The Digital Intensity Index (DII) is a micro-based index that measures the availability at firm level of 12 different digital technologies: internet for at least 50 % of employed persons, recourse to ICT specialists, fast broadband (30 Mbps or above), mobile internet devices for at least 20 % of employed persons, a website, a website with sophisticated functions, social media, paying for advertising on the internet; the purchase of advanced cloud computing services; sending eInvoices, eCommerce turnover accounting for over 1 % of total turnover and business-to-consumer (B2C) web sales of over 10 % of total web sales. The value for the index therefore ranges from 0 to 12.

Figure 4.2. Digital Intensity Index 2016



Source: Eurostat Community survey ICT usage and e-commerce in enterprises

Only in three EU countries is the percentage of firms with a very high DII (i.e. possessing at least 10 out of the 12 monitored digital technologies) above 5 %: DK, SE and FI.

By contrast, in some countries such as RO, BG, HU, LV, IT, and PL the majority (more than 50%) of businesses have not yet invested heavily in digital technologies (i.e. has a very low DI), often having just a simple website and a couple of computers.

In the short term, **social media, eInvoices and mobile applications are driving the digital transformation** of European businesses. Also cloud computing shows high growth rates but only in large enterprises.

The table below shows the degree of penetration and speed of adoption of the different technologies monitored by the Digital Intensity Index. While some seem to be reaching saturation (e.g. having a simple website, access to ICT specialist skills and ERP), at least where large companies are concerned, for the majority there is still room for improvement.

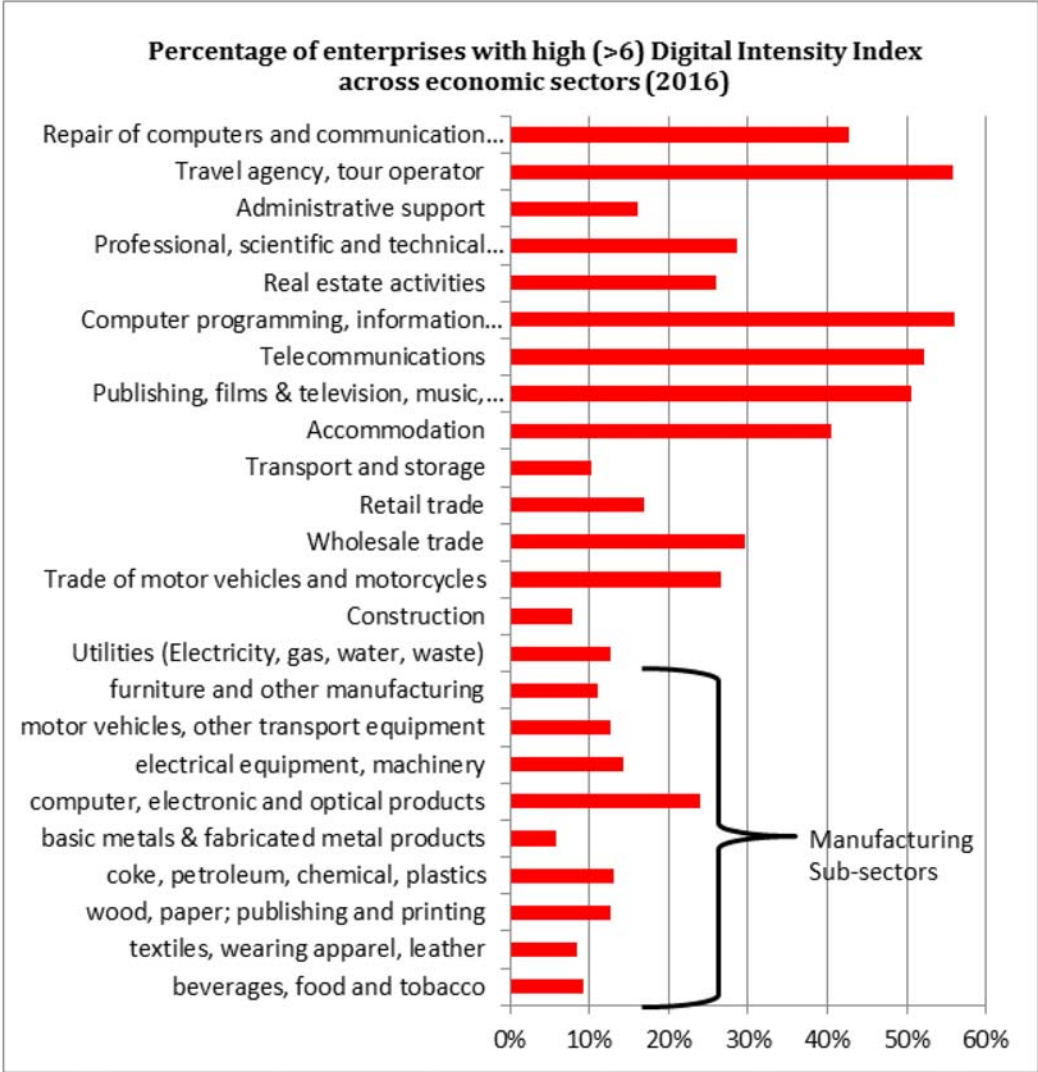
Figure 4.3. Key indicators tracking digitization processes

Key indicators tracking digitization processes	Year	% of EU28 enterprises		Variation 2016 on 2015	
		Large	SMEs	Large	SMEs
Having a web site or homepage	2016	94%	77%	0%	2%
access to ICT specialist skills	2016	90%	64%	-1%	0%
Website has some interactive functionalities	2016	73%	57%	0%	2%
Use any social media	2016	68%	44%	5%	6%
>50% of the persons employed use computers & Internet	2016	48%	39%	0%	1%
have ERP software package to share information	2015	80%	34%	not available in 2016	
use Customer Relationship Management (CRM)	2015	62%	32%	not available in 2016	
fastest broadband connection is at least 30 Mb/s	2016	62%	31%	8%	5%
>20% of workers with portable devices for business use	2016	36%	30%	4%	3%
Pay to advertise on the internet	2016	34%	25%	not comparable with 2015	
selling online (at least 1% of turnover)	2016	38%	17%	0%	1%
sending eInvoices suitable for automated processing	2016	38%	17%	3%	4%
share electronically supply chain management data	2015	47%	16%	not available in 2016	
Buy medium-high Cloud Computing services	2016	29%	13%	5%	1%
Exploit B2C eCommerce	2016	9%	7%	0%	1%
(x) Enterprises where web sales are more than 1% of total turnover and B2C web sales more than 10% of the web sales					
* Estimated using 20 countries collecting the optional indicator in 2015					
** Estimated using 17 countries collecting the optional indicator in 2015					

Source: Eurostat Community survey ICT usage and e-commerce in enterprises

The **digitisation of economic sectors** is progressing at different speeds, according to their own specific needs and starting points.

Figure 4.4. EU Enterprises with high (>6) Digital Intensity Index across economic sectors (2016)



Source: Eurostat Community survey ICT usage and e-commerce in enterprises

As can be expected, it is the different segments of the ICT sector (from telecoms to the manufacture of computers) that tend to be the most digitised sectors of the economy. However, other sectors such as accommodation, travel agencies, cultural industries (publishing, film&television, music) and the wholesale trade are also highly digitised.

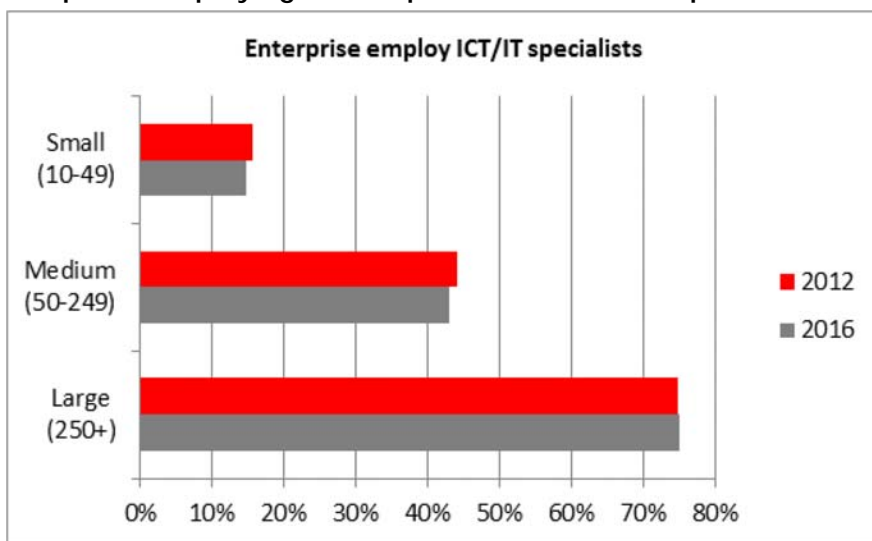
The pattern of sectoral variability in digitisation is similar across EU countries with some positive exceptions of higher digitisation than expected if looking only at the countries and sectoral marginal averages: Information and Communication in CY, HU, PL, SI; Manufacturing in FI;

Construction in DK; Trade in SI; Accommodation in IT, PT, SI; Real Estate in FR; Professional Services in BE, Travel Agencies in IT, PL.

Size is a major factor facilitating the digital transformation of enterprises. SMEs are slowly closing the gap with large companies and there are a lot of opportunities still to be exploited.

The adoption of digital technologies varies strongly with company size. Large enterprises have a scale advantage and more capacity to employ at least some IT/ICT specialists.

Figure 4.5. Enterprises employing ICT/IT specialists, % of enterprises

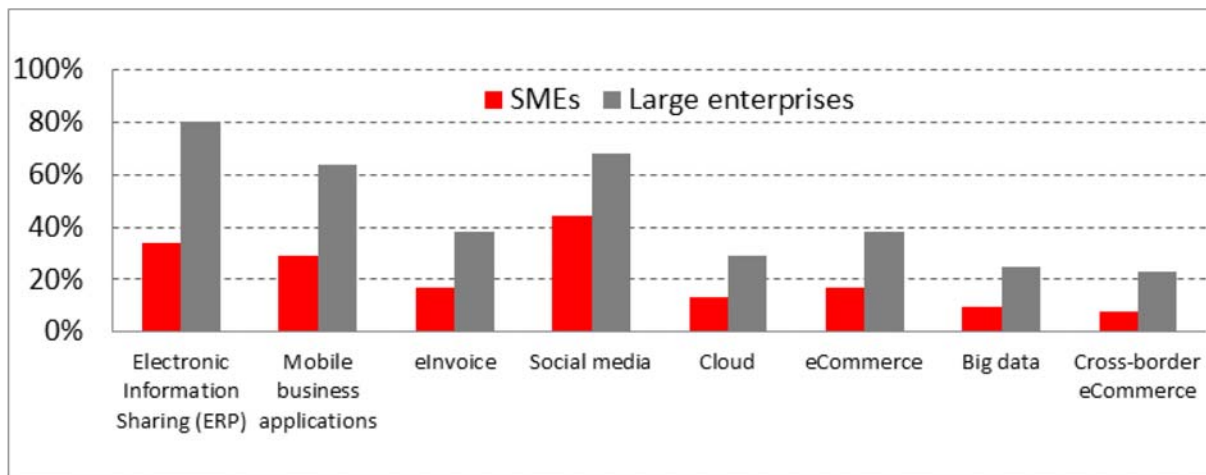


Source: Eurostat Community survey ICT usage and e-commerce in enterprises

The result is that data sharing infrastructure such as ERP is much more common in large companies. However, SMEs are relatively active on social media (44 %) and the usage of mobile internet to allow employees to exploit business application is also becoming more common; there was an increase from 20 to 29% from 2012 to 2016, while for large enterprises it remained stable at 64% over the same period.

There are nevertheless a lot of technological opportunities still to be exploited by SMEs with big data, cross-border eCommerce, cloud services and automation.

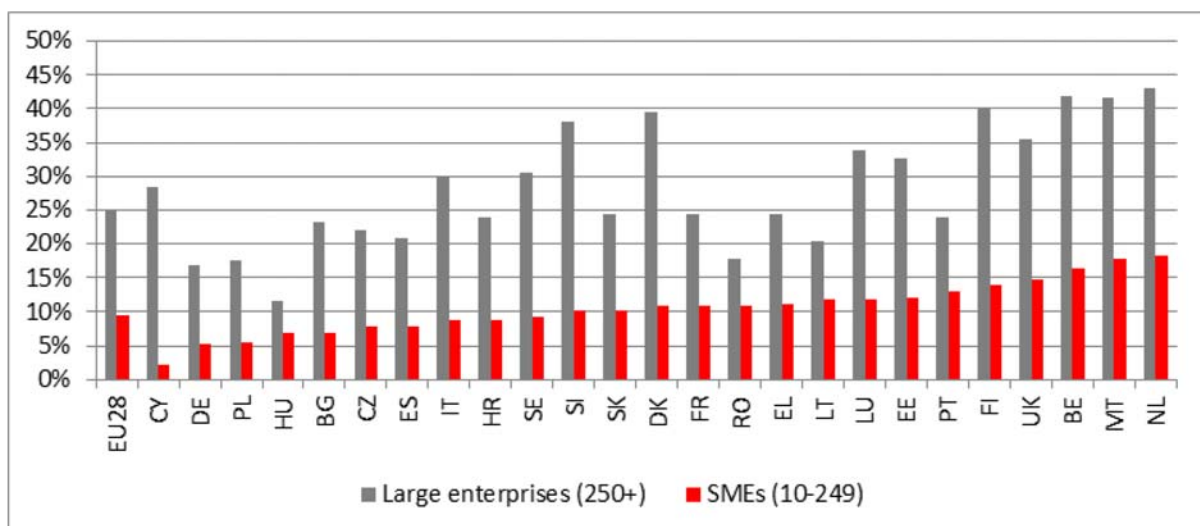
Figure 4.6. Adoption of some key digital technologies by company size, 2015 or 2016, % of enterprises



Source: Eurostat Community survey ICT usage and e-commerce in enterprises

Companies are beginning to utilise big data analytics to gain business insights

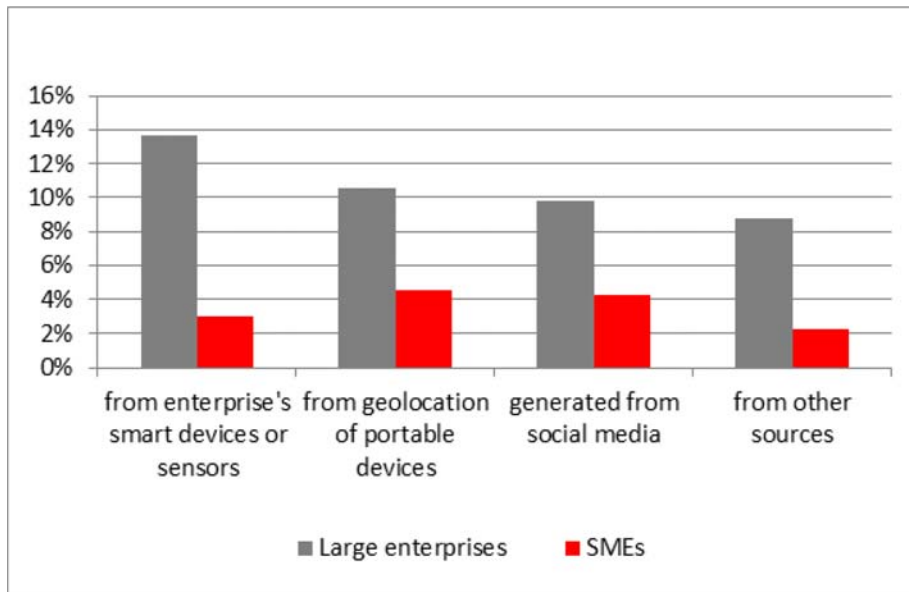
Figure 4.7. % of Enterprises analysing big data from any data source, 2015



Source: Eurostat Community survey ICT usage and e-commerce in enterprises

10% of SMEs and 25% of large enterprises report using some type of big data sources, showing that data driven business models are becoming a reality accessible to every entrepreneur. The most common in large enterprises are those coming from own internal processes and sectors like telecom, electricity, gas, water are in the lead. But data coming from geolocation and social media are more important and more often exploited by SMEs. SMEs from NL, MT, BE or UK seem ahead of those from other countries.

Figure 4.8. Type of big data sources by company size, % enterprises, 2015



Source: Eurostat Community survey ICT usage and e-commerce in enterprises

5. Digital Public Services

For Digital Public Services, Estonia had highest score, followed by Finland, Netherlands and Denmark. Romania, Hungary and Croatia had the lowest scores.

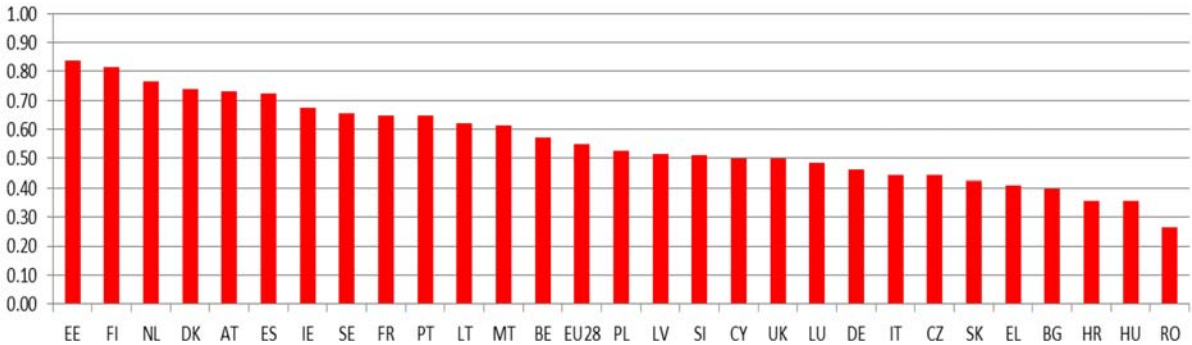
The Digital Public Services dimension consists of four indicators: the percentage of internet users who have sent completed forms to a public administration via the internet (eGovernment users indicator); the level of sophistication of a country's eGovernment services (the pre-filled forms indicator, which measures the extent to which data that is already known to the public administration is pre-filled in forms presented to the user); the level of completeness of a country's range of eGovernment services (the online service completion indicator, which measures the extent to which the various steps in an interaction with the public administration can be performed completely online), and the government's commitment to open data (open data indicator).

Figure 5.1: Indicators included in the Digital Public Services dimension of the DESI 2017:

Digital Public Services Indicators in DESI 2017	EU28 value
5a1 eGovernment Users % internet users (last year)	34% 2016
5a2 Pre-filled Forms Score (0 to 100)	49 2016
5a3 Online Service Completion Score (0 to 100)	82 2016
5a4 Open Data % of maximum score	59% 2016

Source: European Commission, Digital Scoreboard and Eurostat - Community survey on the ICT usage in households and by individuals (the survey covers individuals aged 16 to 74)

Figure 5.2: DESI 2017, Digital Public Services dimension, by country



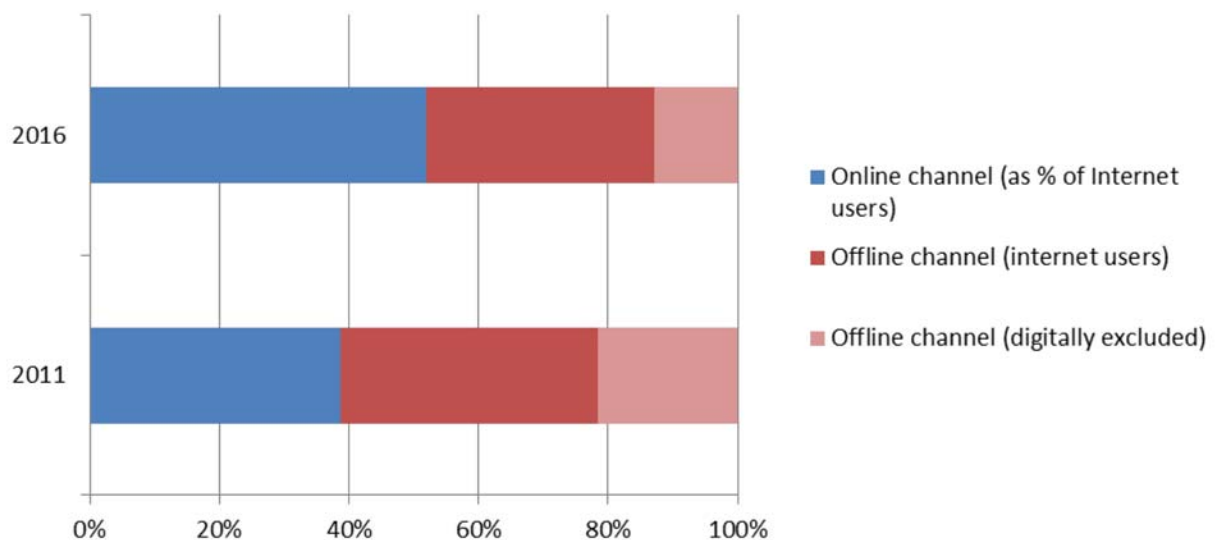
Source: European Commission, Digital Agenda Scoreboard

More than half of the population needing public services chooses the online channel - both old and new internet users alike

Among the citizens needing to submit forms to the public administrations in 2016, 13 % used the offline channel because they did not use internet at all. Of the remaining 87%, all of them internet users, 52 % chose the online channel, while 35% preferred an offline interaction with the public authorities. This marks a considerable progress compared with 2011 when only 39 % of the population was sending completed forms online, and the percentage of those who couldn't because they were not internet users was of 21 %. Overall progress on eGovernment use (13 p.p.) is greater than the reduction in the digitally excluded (8 p.p.) meaning that also previous internet users start approaching more complex services like eGovernment. In total, in five years more than 28 million citizens in the EU27 (excluding IT for lack of data) abandoned the use of paper forms in order to embrace digital solutions.

The percentage of citizens needing to submit forms (for which information is lacking) has been assumed to be analogous to the percentage of internet users needing to submit a form (for which information is available).

Figure 5.3: eGovernment usage potential (preferred channel for submitting forms to public authorities by citizens), EU27



Source: European Commission calculations based on Eurostat - Community survey on the ICT usage in households and by individuals. EU27: EU28 excl. IT

'Digital natives' and their grandparents learn eGovernment. Their lowly educated parents...not so much

Among young people with all levels of education there has been a marked progression in the use of eGovernment, proving that digital natives' online activities are not limited to social media and digital content fruition, but they do extend to more complex services. Similarly, among the elderly there has been a marked progression (between 5 p.p. and 11 p.p.), and again across all education levels (even after taking into account demographic effects, i.e. the transition between age classes between 2011 and 2016). Considering that internet use (and therefore potential eGovernment use) has expanded greatly in this age group (i.e. from 48% to 65% of the population), this progress is remarkable, signalling that eGovernment services are one of the applications of choice for elders users, possibly one of the driving factors behind their digitisation. On the other hand, the middle-aged population with lower education has one of the lowest uses of eGovernment (39%) and it also showed the lowest progress between 2011 and 2016. This is unfortunate because they are probably one of the categories more in need of public services like services for the unemployed, public subsidies (since low education correlates with low income and unemployment).

Figure 5.4: Individuals who submitted completed forms to public authorities over the internet by age groups and education levels (as % of internet users who need to submit official forms), EU27, 2011 and 2016

	Individuals that submitted forms to public authorities over the internet (as % of internet users who need to submit official forms), EU27								
Age-education classes	16-24 years	16-24 years	16-24 years	25-54 years	25-54 years	25-54 years	55-74 years	55-74 years	55-74 years
	low education	medium education	high education	low education	medium education	high education	low education	medium education	high education
2011	32.6%	44.5%	61.9%	37.3%	43.3%	64.9%	32.9%	40.1%	57.6%
2016	46.6%	64.5%	73.5%	39.3%	53.7%	74.6%	37.9%	48.3%	68.7%
pop growth of respective class	-7%	1%	18%	6%	1%	20%	42%	38%	39%

Source: European Commission calculations based on Eurostat - Community survey on the ICT usage in households and by individuals. EU27: EU28 excl. IT

The measurement of eGovernment supply, some methodological notes.

<p>The supply side of eGovernment is measured through a 'user journey' approach. Researchers pose as ordinary users of eGovernment services in an event (i.e. life event) that requires some official action (e.g. a marriage). They go through the steps of meeting the relevant administrative requirements using public authority websites and the online channel where possible.</p>	<p>Eight life events are analysed over two years (with data for four complete measurements in 2012-2013, 2013-2014, 2014-2015 and 2015-2016) in different areas of government:</p> <ul style="list-style-type: none">• losing/finding a job• enrolling at university• moving• starting a small claims procedure• buying/owning a car• Family life• starting a business• regular business operations
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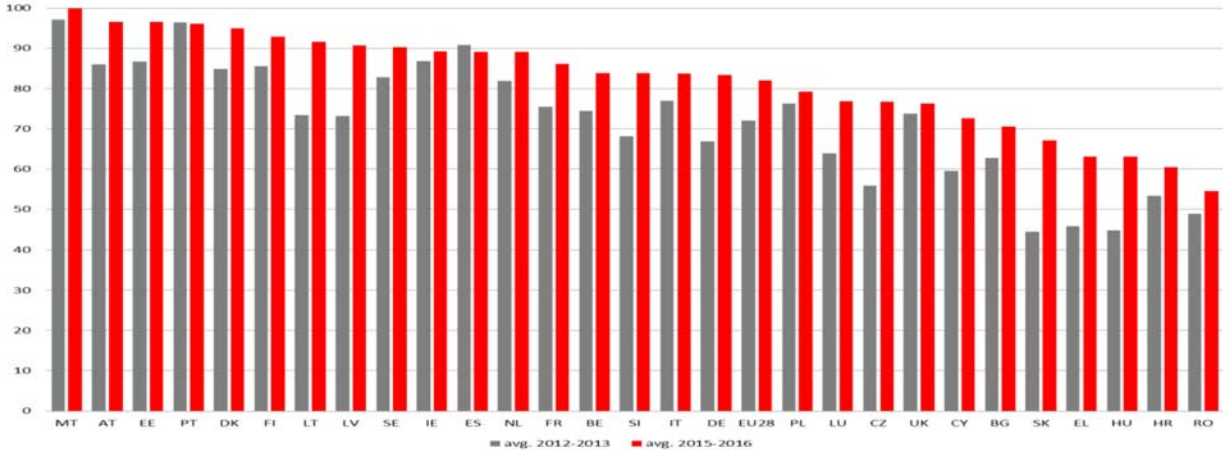
This methodology looks at different aspects of service provision, but the two examined here are the following: Online Service Completion and Pre-filled Forms. The Online Service Completion indicator measures the share of the life event(s) that can be completed online. The Pre-filled forms indicator measures the amount of data that is pre-filled in Public Services' online forms. Both indicators range from 0 (complete absence of required features) to 100 (all features included) and are components of the DESI dimension 'Digital Public Services'.

The source for the eGovernment supply data is the eGovernment Benchmark Report

There is progress in putting government services online but more effort needs to be done by countries lagging behind. Administrative burden reduction through the use of interconnected databases is still in its infancy

Five countries in the EU-28 are very close to having a fully developed digital channel for public services with scores above 95 %: MT (100%), AT, EE, PT and DK. Although countries at the bottom are (mostly) catching up, seven of them still have one out of four services not available online (RO, HR, HU, EL, SK, BG, CY).

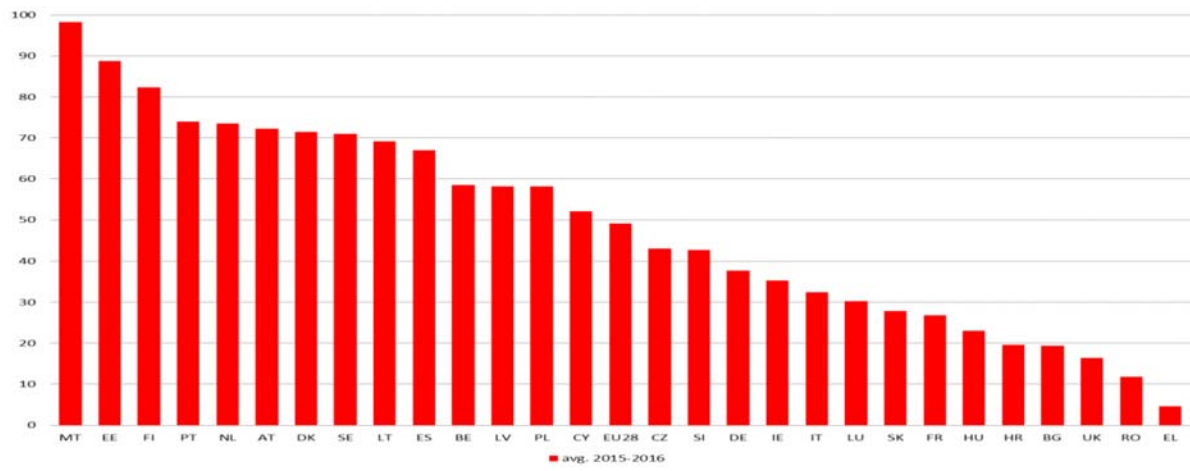
Figure 5.5: Online Service Completion (2012-2013 and 2015-2016)



Source: eGovernment Benchmark Report

The use of inter-connected registers with the purpose of avoiding re-submission of data by the user is not yet widespread. Pre-filled forms are available, for half of EU countries, for less than half of the cases where this could be possible, and sometimes much less than that. Some notable exceptions are MT, EE and FI, with seven other countries following suit.

Figure 5.6: Pre-filled Forms (2015-2016)



Source: eGovernment Benchmark Report