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Europe's Digital Progress Report 2016

2. Human Capital: Digital Inclusion and Skills

For the Human Capital dimension of the Digital Economy and Society Index (DESI), the highest scores were achieved by Finland, Sweden, the United Kingdom and Luxembourg. Romania, Bulgaria, Greece, Cyprus and Italy had the lowest scores.

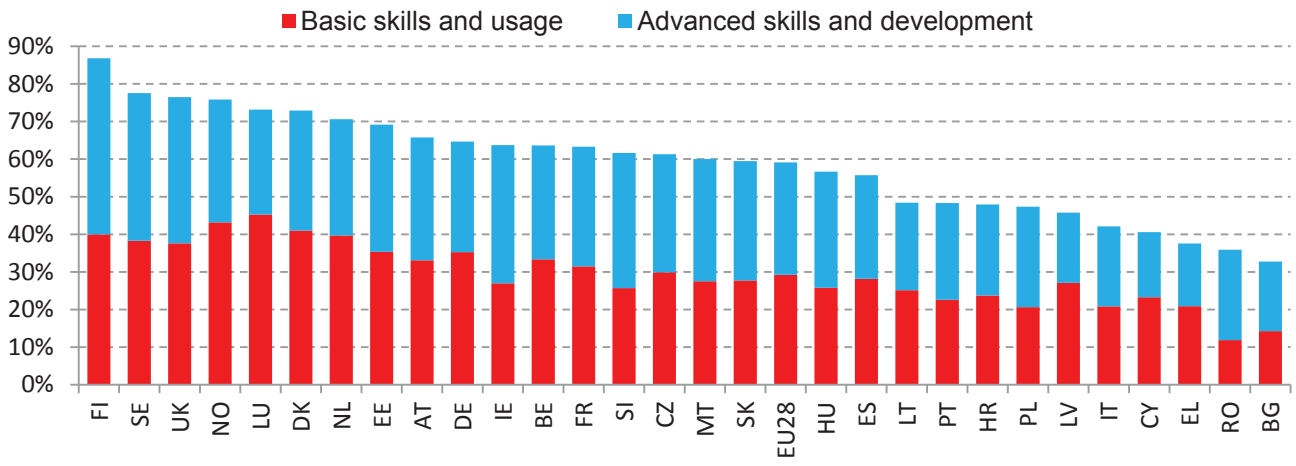
The Human Capital dimension covers (a) 'basic skills and usage' and (b) 'advanced skills and development'. 'Basic skills and usage' comprises indicators of whether people use the internet and of whether they have basic digital skills. 'Advanced skills and development' comprises indicators on ICT specialist employment and on graduates in STEM (science, technology and mathematics). LU, DK, FI, NL and SE score highest for basic skills and usage, while FI, SE, the UK and IE score best for advanced skills and development. RO, BU, EL, CY and IT rank lowest overall on the Human Capital dimension.

Figure 2.1: Indicators included in the Human Capital dimension of the DESI 2016:

	EU-28
2a1 Internet Users % individuals (aged 16-74)	76 % (2015)
2a2 Basic Digital Skills % individuals (aged 16-74)	55 % (2015)
2b1 ICT Specialists % employed individuals	3.7 % (2014)
2b2 STEM Graduates Graduates in STEM per 1 000 individuals (aged 20 to 29)	18 (2013)

Source: European Commission, Digital Scoreboard

Figure 2.2: DESI 2016, Human Capital dimension, by country:

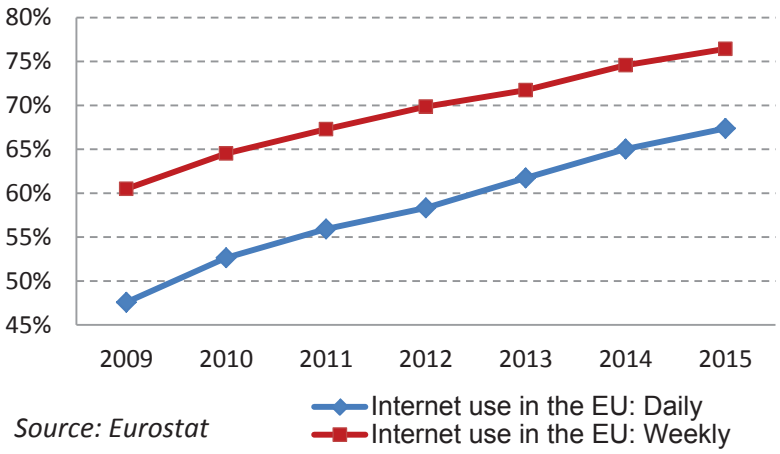


Source: European Commission, Digital Scoreboard

76 % of EU citizens go online weekly, and 67 % daily. 63 % of disadvantaged people use the internet weekly. The old (53 %) and low educated (55 %) are furthest behind.

The percentage of internet users in the population continues to increase; 76 % of the EU population use the internet at least weekly (2015). For most people, internet use is a daily activity: 67 % of EU citizens reported using it daily in 2015. Use by disadvantaged people also rose to 63 % in 2015. These rates are higher than the targets for this year in the Digital Agenda, which were already reached last year. While the steady increase in regular internet use is positive, based on past trends we can still only expect regular use by 90 % of the population by 2024.

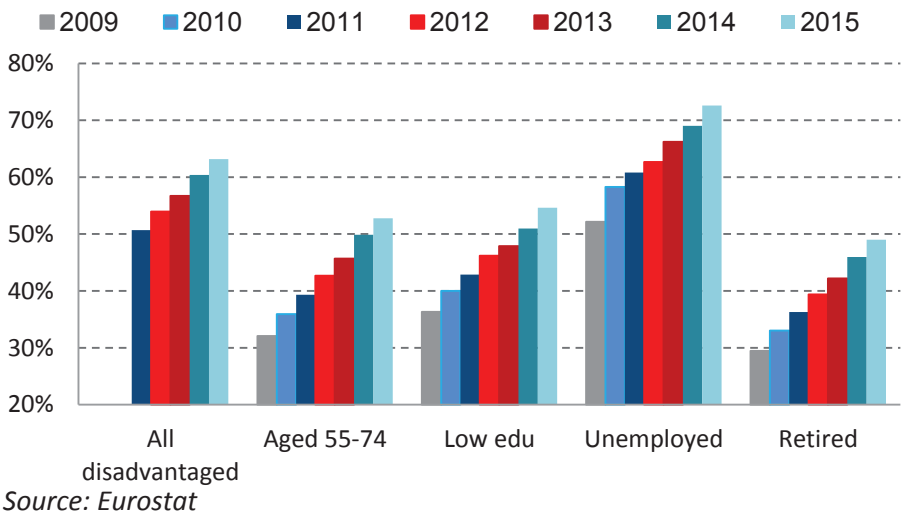
Figure 2.3: Daily and weekly use of internet in the EU (% of population)



Source: Eurostat

Among different categories of disadvantaged people, while the unemployed have a rate of internet use similar to that of the EU average, the rates for the older population (53 %), the low educated (55 %) and the retired or inactive (49 %) remains around 20 percentage points or more lower. In particular, age and education levels are strong determinants of internet usage. Digital inclusion policies should focus on these groups.

Figure 2.4: Weekly use of internet by disadvantaged people

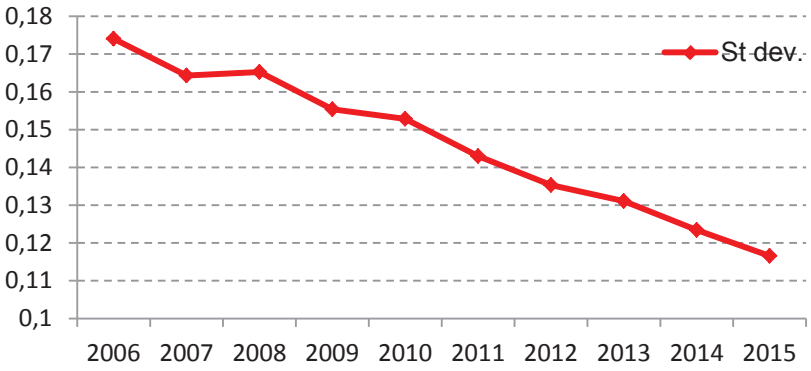


Source: Eurostat

Rates of weekly internet use across the EU Member States remain quite dispersed, but there has been significant catch-up over time.

Across Europe, rates of weekly internet use remain dispersed and the rankings of countries with the highest and lowest rates have changed very little over time. The highest rates of weekly internet use are found in the Nordic countries, Luxembourg, the Netherlands and the United Kingdom, where rates are around 90 % or more. At the other end of the scale, in countries with the lowest rates of weekly internet use in the EU(RO, BG), around half of the population does not use the internet on a weekly basis.

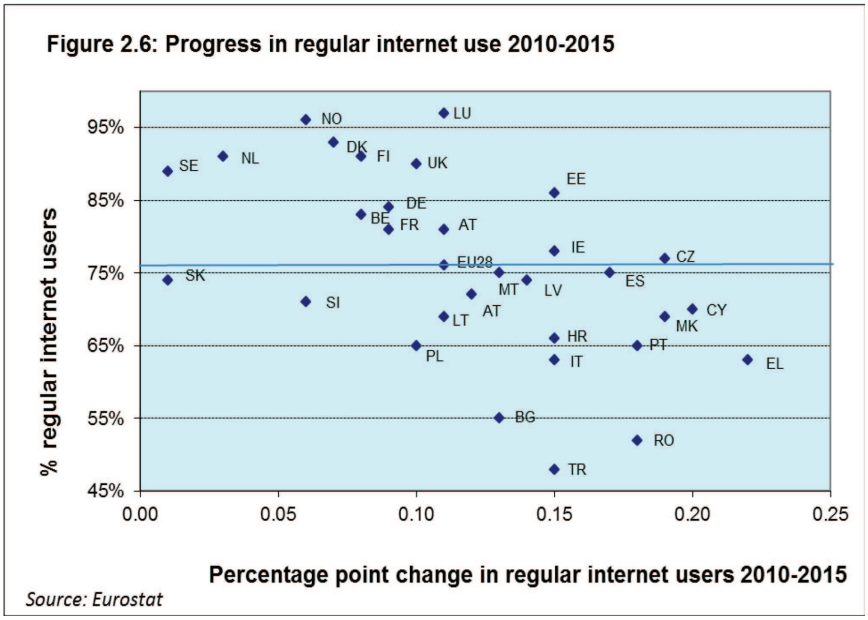
Figure 2.5: Standard deviation of weekly internet use across EU 2006-2015



Source: Commission services based on Eurostat

Nevertheless, there has also been significant catch-up with, generally speaking, larger increases in the rates of weekly use in countries with the most catching up to do. In particular, from 2010 to 2015 regular use of internet by Greek citizens rose by over 20 percentage points. Cyprus, the Czech Republic, Portugal, Romania and the Former Republic of Macedonia have also seen similar rises. Other lagging countries such as Spain, Italy and Croatia have also made significant improvements. All of these countries now have rates above 60 %. While figures for Romania (+18 percentage points) and Bulgaria (+13 percentage points) have also risen, their very low starting position mean that they remain substantially below the EU average.

Figure 2.6: Progress in regular internet use 2010-2015

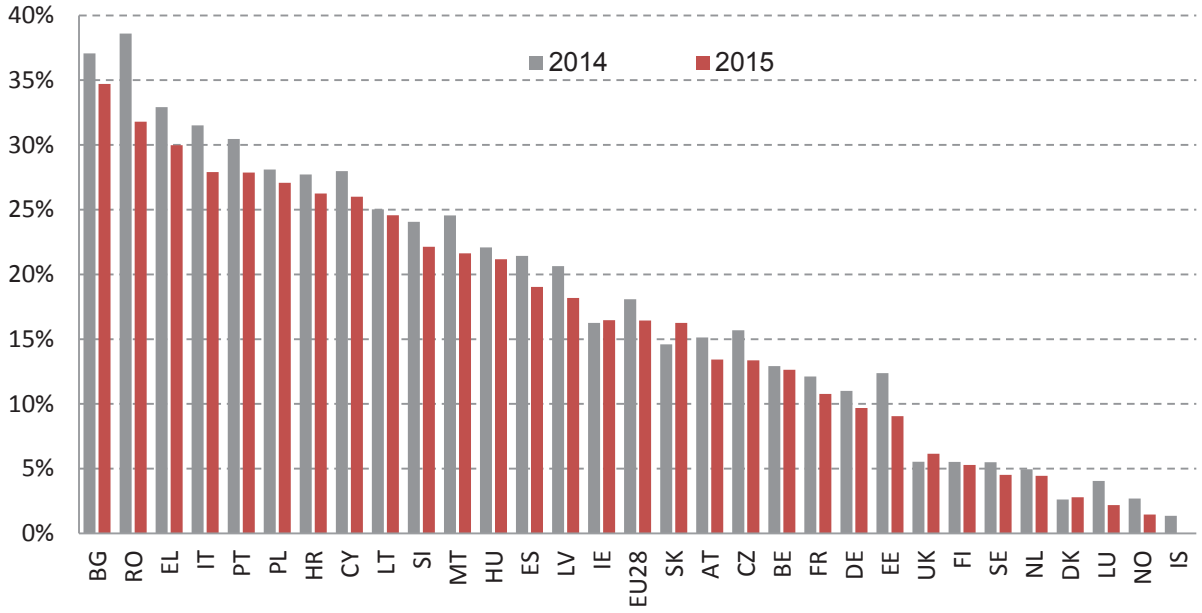


Source: Eurostat

The number of non-internet users continues its gradual downward trend and big improvements have been made in some countries with large rates of non-users. However 16 % of the EU population has still never used the internet.

In the EU, the share of non-internet users in total population fell marginally in 2015, to 16 % from 18 % a year earlier. Nearly all Member States made some improvement in reducing rates of non-users. The biggest improvements were made in Romania (-7 percentage points) and Italy (-4 percentage points). Above average reductions were also made in Greece, Portugal, Malta and Estonia (-3 percentage points each). Taking a longer view, Romania (-25 percentage points) and Greece (-23 percentage points) are the countries that have made the most progress in reducing non-use of the internet by their citizens over the past 5 years; followed by Cyprus (-19 percentage points), Portugal (-18 percentage points), Bulgaria (-17 percentage points) and Croatia (-16 percentage points). However, a number of countries still need to do more to reduce their relatively high shares of non-internet users in total population. Furthermore, Slovenia (22 %; -6 percentage points) and Poland (27 %; -8 percentage points) stand out in 2015 as countries with above average rates of non-users and relatively slow progress in reducing them since 2010.

Figure 2.7: Individuals who never used internet (% of population)



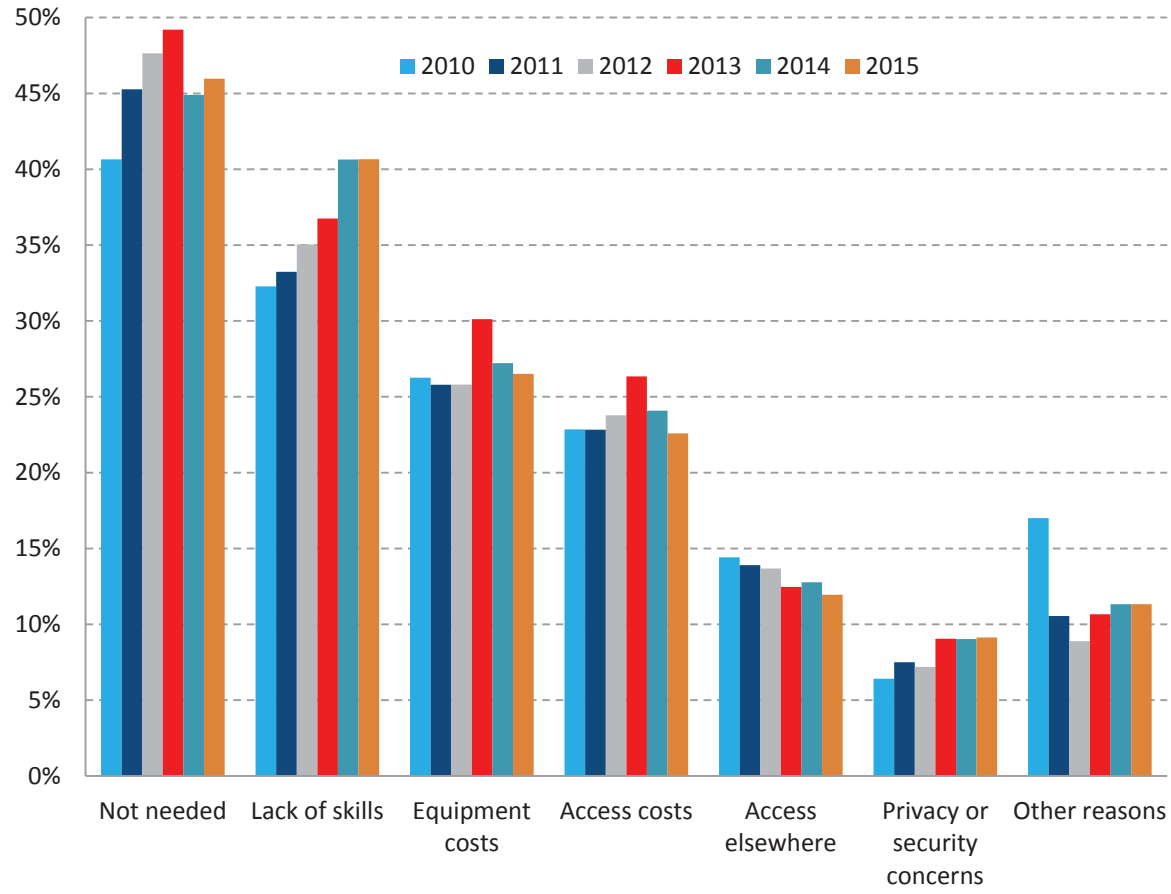
Source: Eurostat

The biggest barriers to internet access at home in the EU are lack of need, insufficient skills and cost barriers. In particular, lack of skills has increased in importance as a reason over time.

The most important reasons for households not having internet access are that it is not needed (46 %), they lack the skills (41 %) or the equipment (27 %) or access (23 %) costs are too high. In particular, lack of skills has gained substantially in importance over time (+9 percentage points since 2010). Lack of need has also increased as a reason but has declined somewhat since 2013. While a relatively less cited reason, concerns about privacy and security (+3 percentage points since 2010) have also risen.

Looking at **different household types**, cost factors are substantially more important reasons for not having internet access at home among households with children (61 %) and those on low incomes (42 %).

Figure 2.8: Barriers to internet access at home in the EU-28 (% households without internet access)



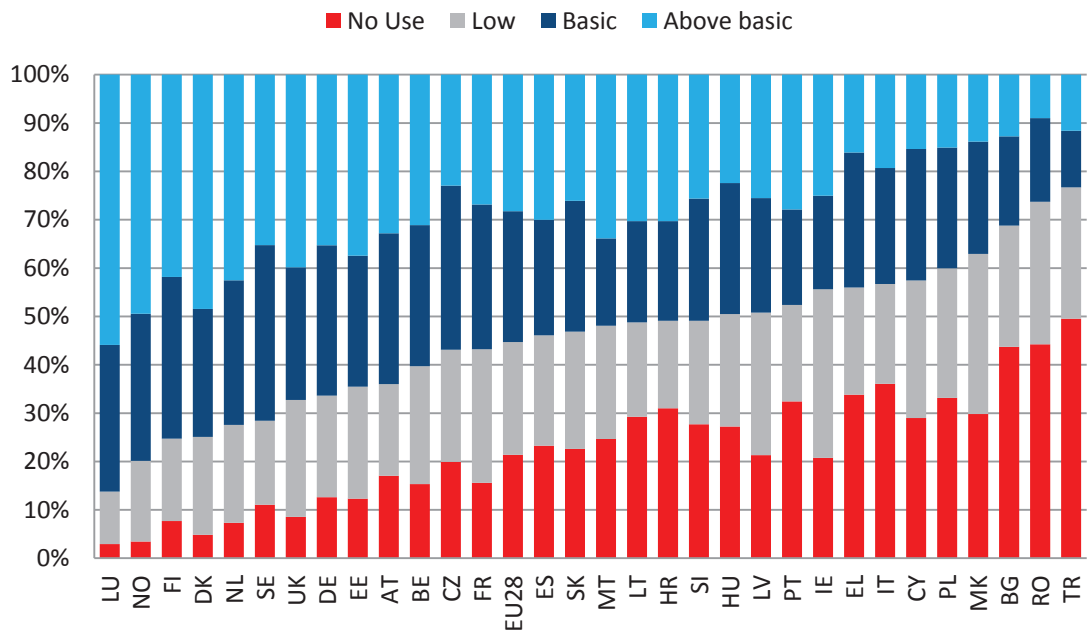
Source: Eurostat

In 2015 45 % of the EU population had an insufficient level of digital skills. 21 % had none at all, as they did not use the internet.

According to the **Digital Skills Indicator,**[1] a composite indicator based on the EU digital competence framework for citizens,[2] 21 % of the EU population can be considered as having no digital skills (2015) as they are not using the internet. This figure ranges from 3 % in Luxembourg to 44 % in Bulgaria and Romania. In eight countries (PT, PL, HR, CY, IT, EL, BG and RO) 30 % or more of the population have no digital skills. In Italy, with its large population, this equates to almost 18 million people without digital skills; in Poland it means around 12 million.

Considering that to function effectively in a digital society an individual needs more than low level skills (e.g. only being able to send emails), 45 % of the EU population can be considered as insufficiently digitally skilled (having either low or no digital skills or not using the internet).[3] Seventeen Member States have rates higher than this. In Romania (74 %) most of the population does not have the skills they need to function effectively in the digital world.

Figure 2.9: Digital Skills in the EU, NO, MK and TR, 2015 (% individuals with above basic, basic and low digital skills and no internet use)



[1] http://ec.europa.eu/newsroom/dae/document.cfm?action=display& doc_id=9979 .

[2] EU Digital Competence framework for citizens (DigComp) was developed by the Joint Research Centre's Institute for Prospective Technologies Studies on behalf of DG Employment, Social Affairs and Inclusion. For more information, see https://ec.europa.eu/jrc/en/digcomp/.

[3] A 'low skilled' individual is someone who has carried out activities from only one of the four digital competence domains included in the index (information, communication, content creation or problem-solving). To qualify as having 'basic skills', an individual has to have 'basic skills' in at least one domain, and 'no use' in none. To be classified 'above basic', the individual has to score above basic in each of the four domains.

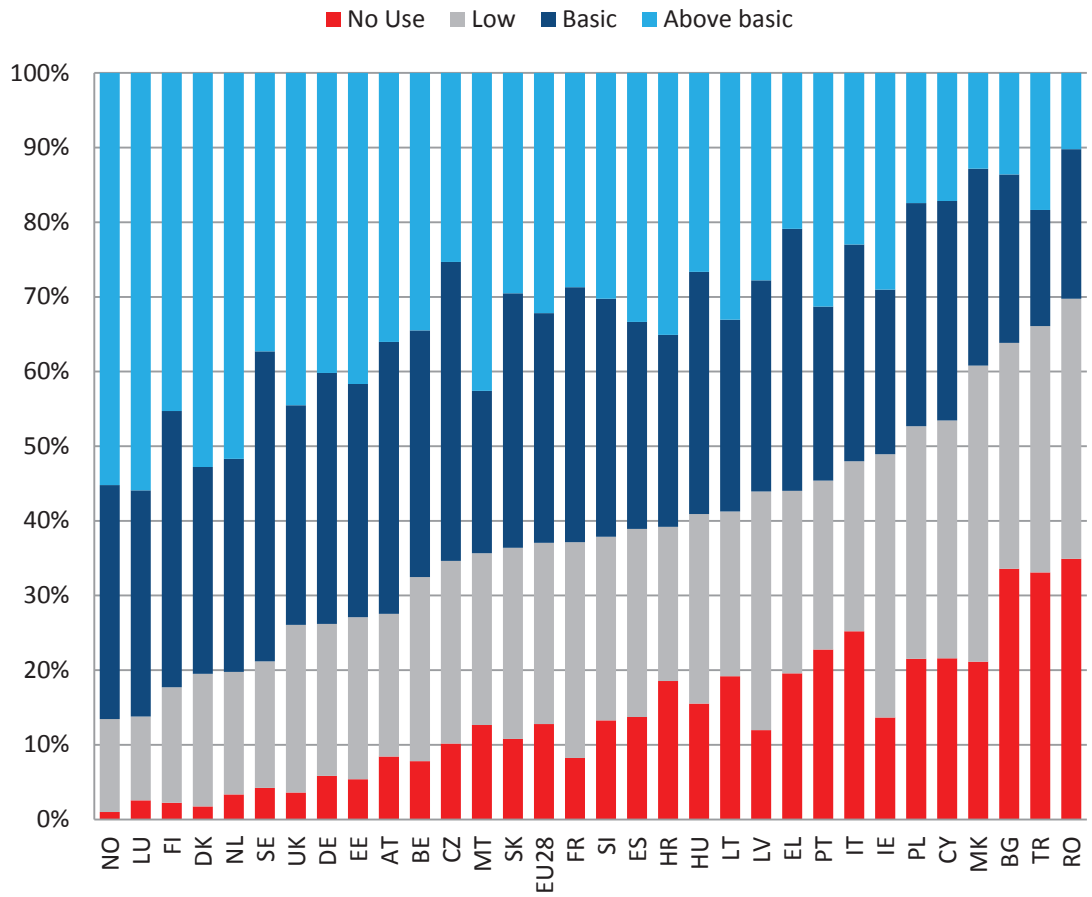
Source: Commission services based on Eurostat data

In 2015 37 % of the EU labour force had an insufficient level of digital skills.13 % had no digital skills at all, as they did not use the internet.

Rates of **digital skills among the labour force** are on average higher than for the average population in the EU. Only 13 % of the EU labour force has no digital skills (most not using the internet). However, in some Member States rates are still relatively high. In seven countries (EL, CY, PL, PT, IT, BG and RO) rates are at or above 20 % of the labour force. In Romania and Bulgaria more than a third of the labour force has no digital skills.

If we also add to this the percentage of the labour force who have only a low level of skill, 37 % of the EU labour force can be considered to be insufficiently digitally skilled. In 15 Member States (FR, SI, ES, HR, HU, LT, LV, EL, PT, IT, IE, PL, CY, BG and RO) the percentage is higher. In Bulgaria (64 %) and Romania (70 %) it is most of the labour force.

Figure 2.10: Digital skills of the labour force, 2015 (% labour force with above basic, basic or low digital skills or no internet use)

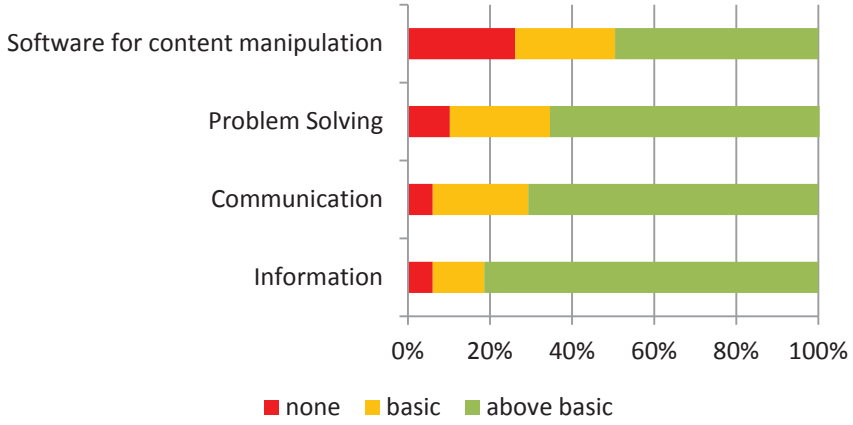


Source: Commission services based on Eurostat data

Internet users in the EU most lack the digital skills needed to use basic software tools which are increasingly seen as indispensable in the workplace and beyond

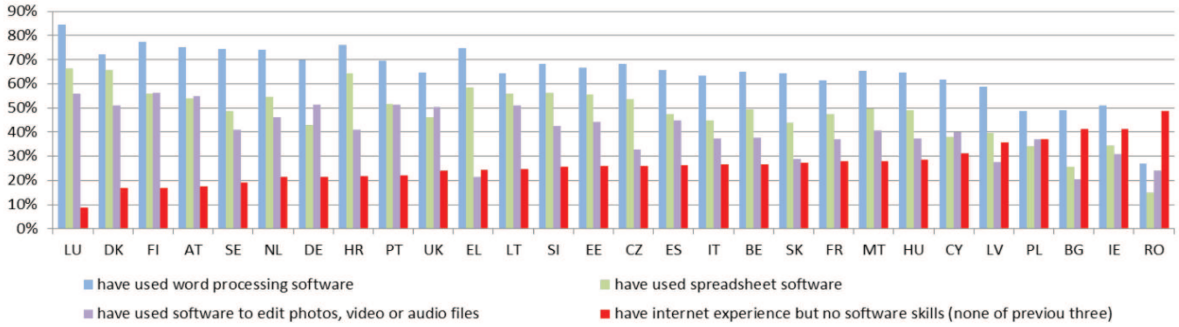
Among the four digital competence domains assessed in the digital skills indicator,[4] internet users in the EU most lack the digital skills needed to create and manipulate commonly used basic software tools. While only 6 % of internet users in the EU report not having carried out any of the commination or information activities and only 10 % any of the problem-solving tasks, 26 % have not used any of the more common basic software for the manipulation of text, data, photos or videos. This group of internet users, ranging from 9 % (LU) to 49 % (RO), it can be considered, are at an increasing disadvantage in the labour market, as more and more jobs require these types of skills.

Figure 2.11: Digital skills in the EU by digital competence domain, 2015 (% of internet users)



Source: Commission services based on Eurostat data

Figure 2.12: Software skills of internet users in the EU, 2015



Source: Commission services based on Eurostat data

[4] These are: information, communication, software, and problem-solving (the fifth domain, security, is not assessed, for lack of suitable indicators). In each domain, a set of activities is used to determine whether individuals have the skills or do not have the skills and in some cases (where information is available on the variety or complexity of the task) whether the level of skills is 'above average'.

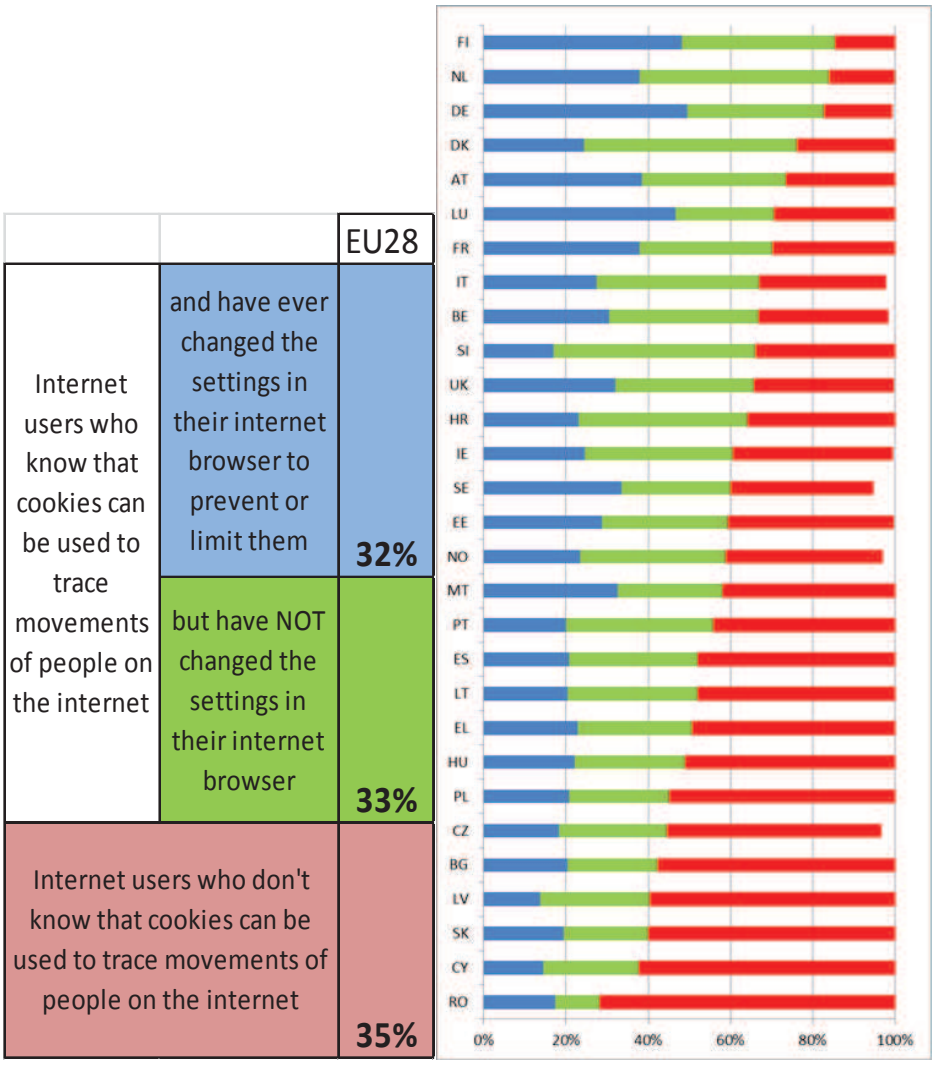
EU digital citizens are not always able to protect themselves, their data and their privacy.

Cookies are largely used by almost all web-services with different purposes, but still more than one third of European internet users (35 %) do not know they can be used to trace their online movements.

Among the remaining, more aware, internet users, only half has taken action to prevent or limit cookies by changing browser parameters.

There seems to be greatest awareness in countries with more advanced and longer use of ICT technologies. There are some national particularities, like Germans being very protective of their privacy, and DK, SI and NL internet users, despite different degrees of awareness, taking little action against cookies.

Figure 2.14: Security and privacy skills (knowledge and management of cookies) of internet users, 2015



Source: Commission services based on Eurostat data

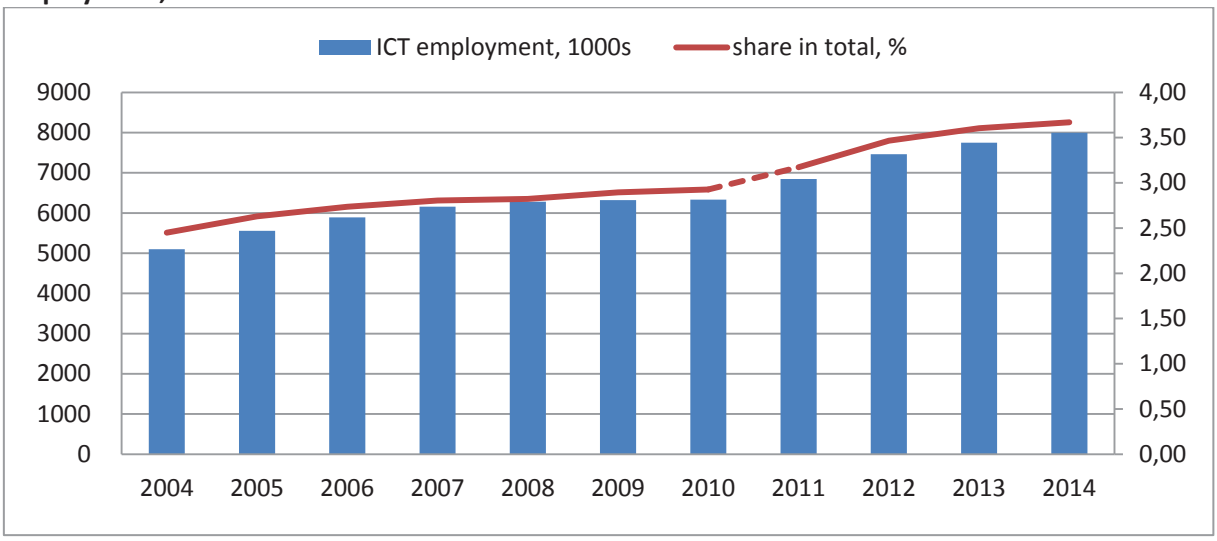
Over the last decade, employment of ICT specialists has grown by 2.9 million in the EU. By contrast, total employment has not improved and has been falling since the onset of the crisis in 2008.

Over the period 2004-2014[5] employment of ICT specialists in the EU-28 grew significantly by 2.9 million; from around 5.1 million in 2004 to 8 million in 2014. This resulted in an increase in the share of ICT employment in total employment from 2.5 % to 3.7 %. ICT employment growth averaged over 4 % a year (allowing for the break in the series in 2010-2011). By contrast, the average growth rate of total employment was 0.4 % a year. Overall employment fell almost continuously following the onset of the economic and financial crisis in 2008 and has only begun to increase once more since 2014.[6]

All EU countries have seen a big increase in ICT specialist employment in the last 10 years. The largest employment gains were made in the big Member States, DE (765 000), FR (417 000), ES (269 000), PL (182 000) and the UK (162 000). However, growth in ICT specialist employment has been very substantial in many smaller countries. The Member States with the highest rates of ICT specialist employment in total employment are FI (6.7 %), SE (6 %), LU (5 %), NL (5 %), EE (5 %) and the UK (4.9 %).

The UK employs the largest number of ICT specialists in absolute terms (1.49 million); however, Germany is rapidly catching up (1.47 million), having doubled its ICT employment in the last 10 years. The biggest employment gains have been made outside the ICT sector and in the ICT services sector.

Figure 2.15: Employment of ICT specialists in the EU in absolute terms and as a share of total employment, 2004-2014



Source: Eurostat

[5] Since this period included the break in series due to the update of ISCO to its latest version, the figures referring to the dynamics of ICT specialists' employment need to be interpreted with caution.

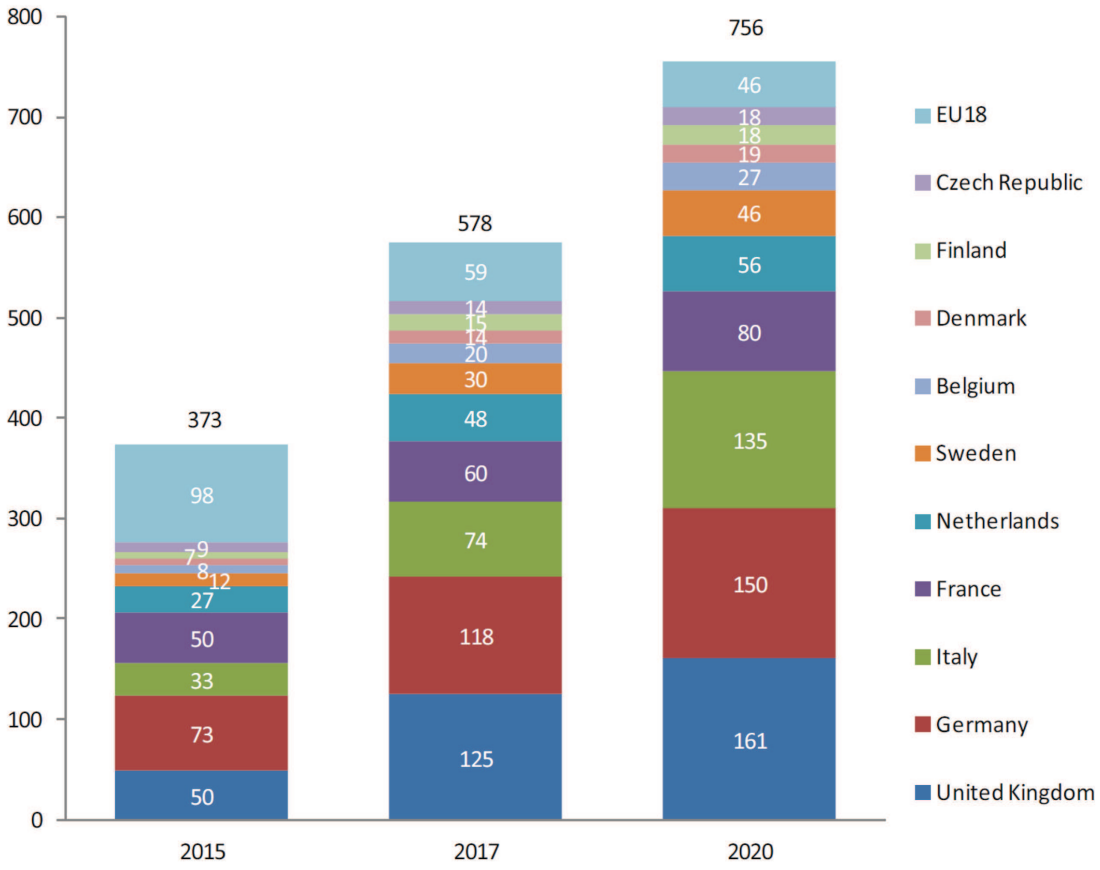
[6] http://ec.europa.eu/eurostat/statistics-explained/index.php/File:Employment_rate,_age_group_15 %E2 %80 %9364,_2004 %E2 %80 %9314_(%25)_YB16.png.

The EU has a growing deficit of ICT professional skills, forecast to reach 756 000 by 2020.

Despite the strong rise in employment of ICT professionals in the EU over the past decade, the **employment potential of ICT is underexploited**. Evidence shows that there is a growing gap emerging between the demand for and supply of ICT specialists in Europe. The latest forecasts suggest the gap could double over the next five years: from 373 000 in 2015 to 756 000 by 2020.[7]

Currently the largest ICT professional skills gap is to be found in **Germany, followed by the UK and France**. These skills gaps are expected to grow substantially up to 2020, especially in the **UK, Germany, Italy and France**; largely due to insufficient production of ICT graduates to keep up with strongly increasing demand for ICT professionals in these countries.

Figure 2.16: E-Skills Vacancies Estimate — Main forecast scenario: Distribution of vacancies per country ('000s)



Source: Empirica (November 2015)

[7] http://eskills-lead.eu/fileadmin/LEAD/Working_Paper_-_Supply_demand_forecast_2015_a.pdf.

The Commission's Grand Coalition for Digital Jobs initiative and the 13 national coalitions have led to the training of an estimated over 2 million people since the initiative's launch in 2013.

The European Commission is addressing the lack of digital skills in Europe with its **Grand Coalition for Digital Jobs** initiative.[8] This multi-stakeholder initiative has so far attracted around 60 pledges, from over 100 stakeholders, to take action to reduce digital skills gaps in Europe. Action is grouped around five themes: training and matching for digital jobs (29), certification (6), innovative learning and teaching (11), mobility (1) and awareness raising (12). It has also lead to the setting up of national coalitions in 13 countries (BE, BG, CY, EL, IT, MT, NL, LT, LV, PL, PT, RO, UK), with more to come. There are also active local coalitions in a number of regions around Europe.

To help set up national and local coalitions in the EU Member States, the Commission has produced a 'toolkit' providing useful information and outlining the essential ingredients for a successful coalition.[9]

It is estimated that these actions and initiatives have led to the **training of over 2 million people in digital skills** since the launch of the coalition in 2013. Ongoing and recent new pledges and initiatives will lead to the training of millions more. Progress on the pledges of the Grand Coalition is self-reported by pledgers on the Grand Coalition Pledge Tracker.[10]

[8] https://ec.europa.eu/digital-single-market/en/grand-coalition-digital-jobs.
[9] https://ec.europa.eu/digital-single-market/sites/digital-agenda/files/toolkit_for_national_and_local_coalitions_5.pdf.
[10] http://www.linkedpolicies.eu/pledge/.

3. Use of the internet in the EU

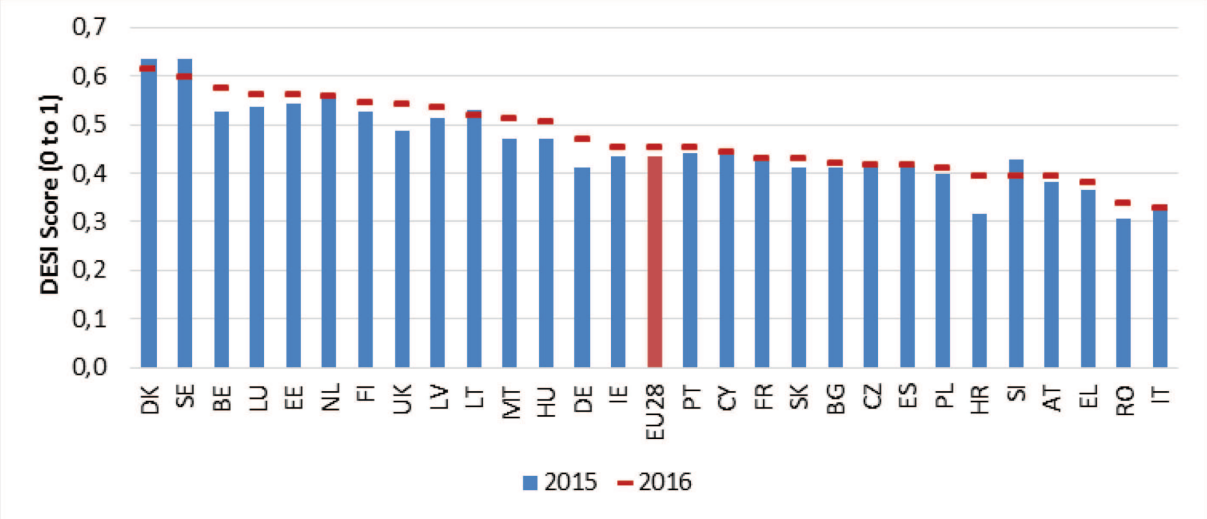
People in the EU engage in a **range of online activities** — they consume content, communicate, shop, use online banking services and much more. Such activities are captured in DESI dimension 3, on internet use. Denmark, Sweden and Belgium have the most active internet users, followed by Estonia, the Netherlands and Finland. However, **Croatia, Germany and the UK showed the biggest increase** in the DESI score. Denmark overtook Sweden to take first place. At the same time, both these countries actually saw a small decrease in their DESI score for Use of Internet. Croatia increased and climbed from 27th to 23rd position. Italy saw a small decrease and was overtaken by Romania and Croatia.

Figure 3.1: Indicators included in the Use of the Internet dimension of the DESI 2016:

	EU DESI 2016 value
3a1 News % individuals who used Internet in the last 3 months (aged 16-74)	68% (2015)
3a2 Music, Videos and Games % individuals who used Internet in the last 3 months (aged 16-74)	49% (2014)
3a3 Video on Demand % households that have a TV	41% (2014)
3b1 Video Calls % individuals who used Internet in the last 3 months (aged 16-74)	37% (2015)
3b2 Social Networks % individuals who used Internet in the last 3 months (aged 16-74)	63% (2015)
3c1 Banking % individuals who used Internet in the last 3 months (aged 16-74)	57% (2015)
3c2 Shopping % individuals who used Internet in the last year (aged 16-74)	65% (2015)

Source: European Commission, Digital Scoreboard

Figure 3.2: Digital Economy and society (DESI), Use of the Internet, 2016



Source: European Commission, Digital Scoreboard

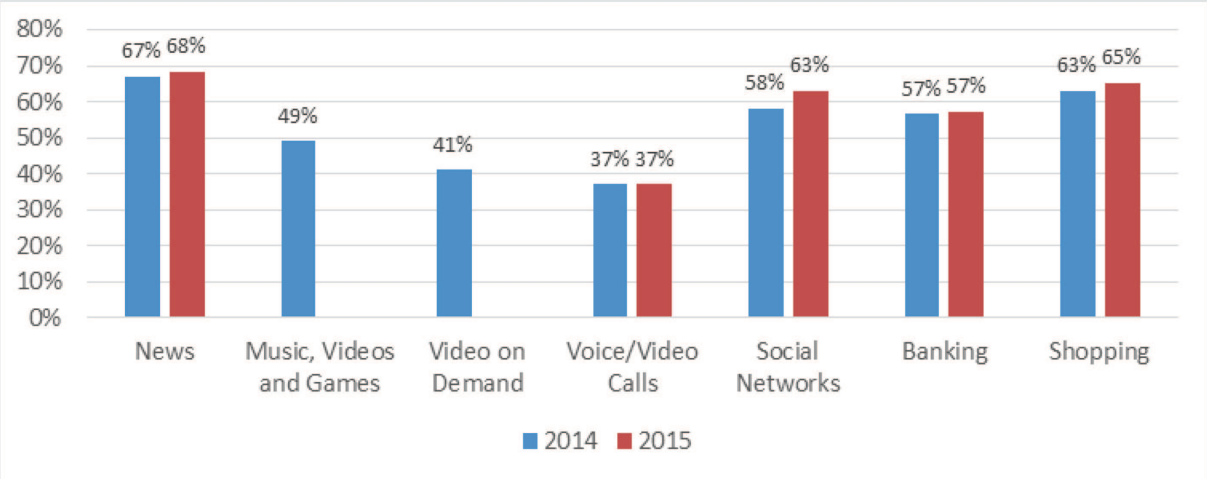
Overall slowdown in growth of online activities

Between 2014 and 2015, progress in the different activities used as indicators in the Use of Internet dimension has been slow. The **biggest increase** was observed in the percentage of internet users active on social networks — 5 percentage points. All other indicators showed small or no increase at all for the European average. The Video on demand and Music, Videos and Games indicators were not collected in 2015.

Internet users in the EU are active in **obtaining content** online, with two thirds reporting reading news online in 2015 and nearly half downloading music, videos and games in 2014. EU households are also using the internet to watch televised entertainment, both via video on demand and via IPTV.

EU citizens also use the internet for **communication**. More than one third of internet users place calls (video or audio) over the internet, and 63 % interact using social networks. For **online transactions**, users are keen on doing their banking activities online (57 %) and close to two thirds of them reported to have shopped online during 2014.

Figure 3.3: Indicators in the Use of Internet component, EU-28 (% of internet users)

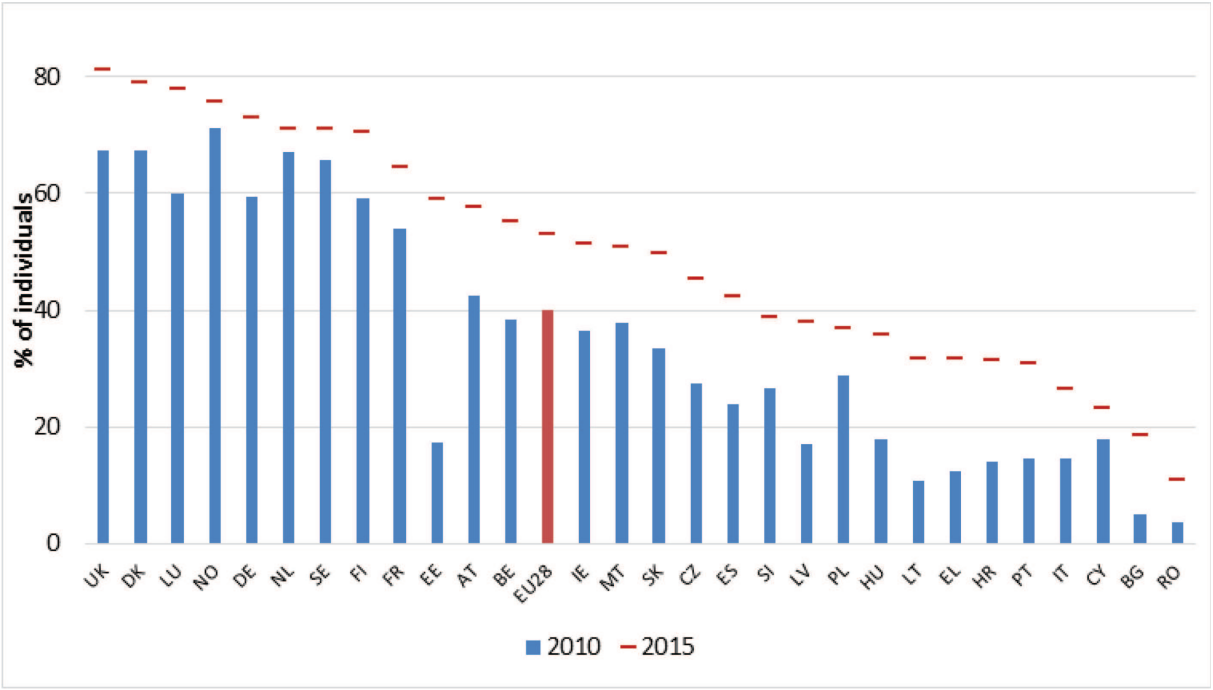


Source: European Commission, Digital Scoreboard

eCommerce: Individuals ordering goods and services online

Over the last five years, the number of European citizens ordering goods and services online has increased by 13 percentage points, to 53 %. As with many other online activities, e-commerce is higher among younger and higher educated people. These groups also had higher growth over the last five years so other groups are not yet catching up. Countries where online shopping among citizens was less common in 2010 have seen higher growth rates over the last 5 years than the ones at already high levels. Still, even where levels were high in 2010, there has been an increase in the number of people shopping online. The big increase for Estonia is due to a change in methodology.

Figure 1.4: Individuals ordering goods and services online in the last 12 months, EU-28, 2010, 2015 (% of internet users)

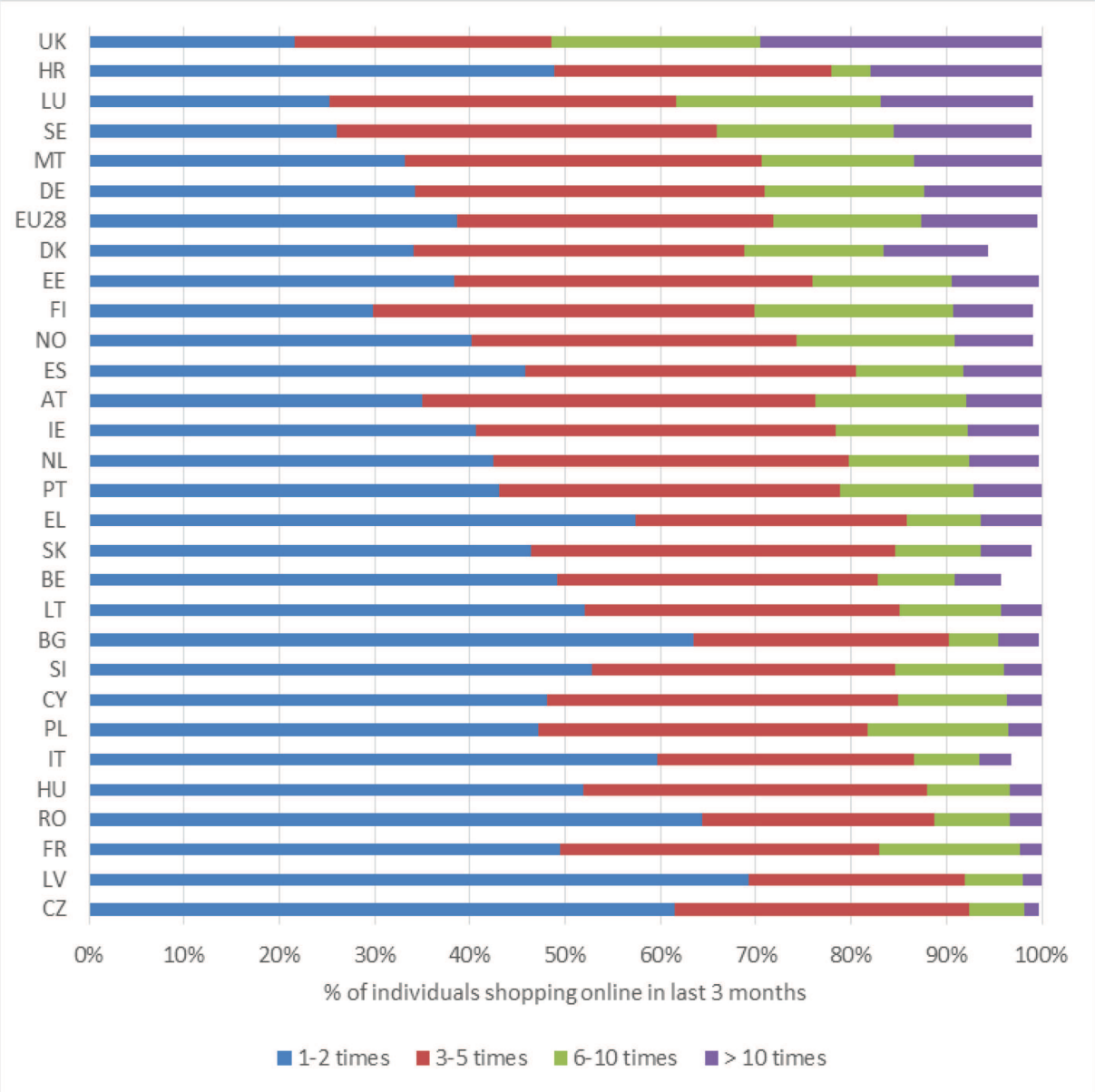


Source: European Commission, Digital Scoreboard

There has been a a small increase in the number of online purchases over the Internet since 2009

Most people (72%) did between 1 and 5 purchases/orders online over last three months at the time of the survey. Only 12% said that they did more than 10 purchases. The UK has the highest share of frequent online shoppers with 29% making more than 10 purchases, while in Latvia and the Czech Republic the figures are only 1 and 2% respectivley. There has been small changes since 2009 and only few online shoppers do more frequent purchases today. On average 39% spent less than 100, 40% spent 100-499 and 19% spent more than 500 online over the last three months. There has only been small changes in the money spent since 2009 as well.

Figure 2.5: Frequency of online purchases/orders online in the last 3 months, EU-28, 2015 (% of internet users buying online in last 3 months)



Source: *Commission services based on Eurostat data*

eCommerce: Barriers and problems

In 2015 70 % of online shoppers encountered no problems when buying goods or services online. Among those that did encounter problems, speed of delivery was the most common, given by 16 %. The 2015 DSM survey of online consumers[11] also revealed that for the 31 % of respondents who reported having had at least one problem with online purchases over the previous 12 months, the most common problem was with delivery (17 %: long delivery time). A series of problems with the product followed, such as its being of lower quality than advertised (15 %), being defective or the wrong product (14 % and 13 % respectively), or the product not being received at all (13 %).

The survey showed that the main consumer concerns about purchasing products online domestically were linked to: data protection and payment security (30 % of respondents were concerned that personal data may be misused and 26 % that payment details might be stolen) and consumer rights (fear of receiving wrong or damaged products (26 %), not finding it easy to replace or repair a faulty product (25 %) and not finding it easy to return a product they did not like and be reimbursed (22 %).

People who did not buy anything online within the previous year most commonly said that they "preferred to shop in person, like to see the product, choose shops out of loyalty or act from force of habit". This reason was given by 75 % of the non-online shoppers. Payment security concerns were a reason for 27 %, although only 3 % of e-shoppers encountered problems with fraud. Lack of trust — concerns about receiving or returning goods and complaints/redress — was given as reason not to shop by 19 %, although only 4 % of e-shoppers actually encountered problems that complaints and redress were difficult or no satisfactory response was received upon complaint.

[11] **'Identifying the main cross border obstacles of the Digital Single Market and where they matter most', GfK for the European Commission, September 2015.**

Figure 3.6: Most common problems encountered while buying online, EU-28, 2015 (% e-shoppers)

Five most common problems encountered while buying online	share
Speed of delivery longer than indicated	16 %
Technical failure	12 %
Wrong or damaged good/services	8 %
Difficulties finding information concerning guarantees, other legal rights	5 %
Complaints and redress were difficult or no satisfactory response received after complaint	4 %

Source: Eurostat

Figure 3.7: Most common reasons for not buying online, EU-28, 2015 (% people who did not buy in the last 12 months)

Five most common reasons for not buying online	share
Prefer to shop in person, they like to see product, loyalty to shops or force of habit	75 %
Payment security concerns	27 %
Trust concerns about receiving or returning goods, complaint / redress concerns	19 %
Lack the necessary skills	18 %
Don’t have a payment card	13 %

Source: Eurostat

Internet users face a number of security threats online

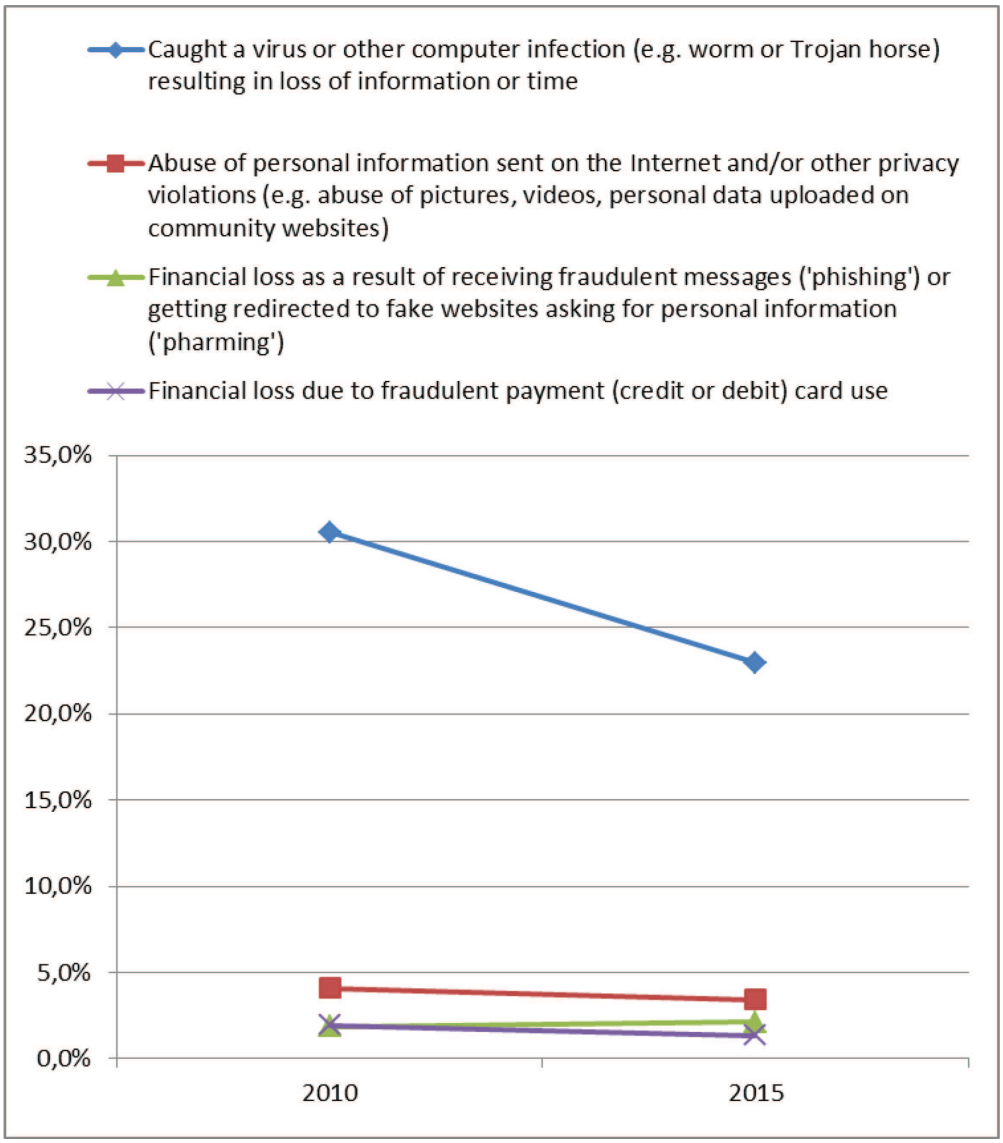
Internet users encounter a variety of security problems. For four of them we can see if the environment has changed in the last five years.

Over the period 2010-2015, the percentage of internet users experiencing any of the four security problems fell by 10 percentage points to 24 %. This was mainly due to fewer cases of damaging virus infections, at least those recognised by users.

Financial losses and abuse of personal information are rarer, but their gravity for victims can be important. They still happen, so it is natural that news of such cases raises concerns even among people who are not directly affected.

New forms of security threats have also appeared that are not yet monitored, like catfishing, ransomware and identity theft (see ENISA Threat Landscape 2015)

Figure3.8: Individuals experiencing security problems online, EU-28, 2015 (% of internet users)



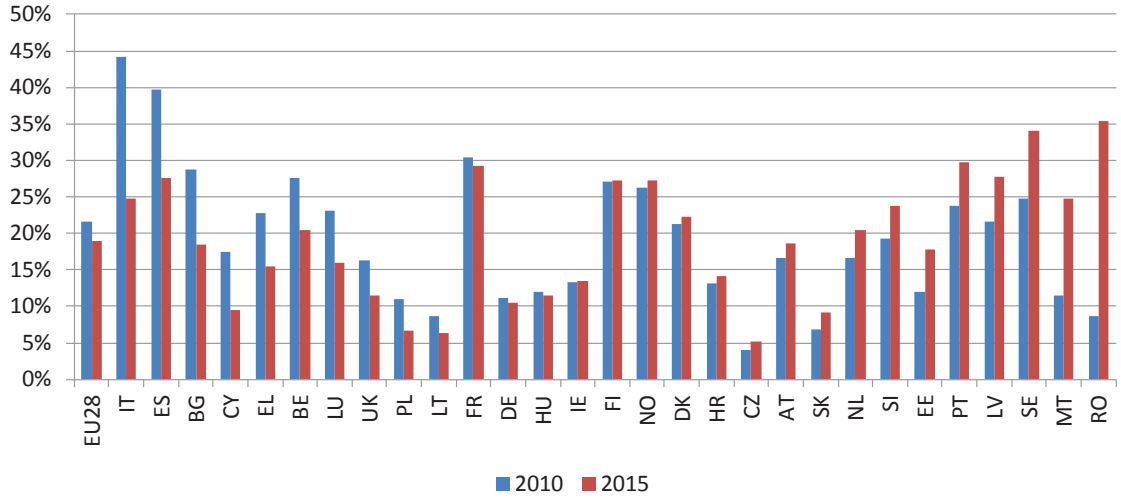
Source: Eurostat

Security concerns continue to keep 1/5 of internet users away from online transactions (e-commerce and e-banking)

Over last five years, the share of internet users declaring that security concerns have limited or kept them away from basic online transactions has fallen somewhat, to just under 20 %. Such slow progress is challenging the construction of a true digital single market at EU level, However the situation varies greatly between EU Member States. Some, among the more reticent to trust online transactions, have made substantial progress: IT, ES, and BG. The left side of the charts below shows those countries with better progress since 2010.

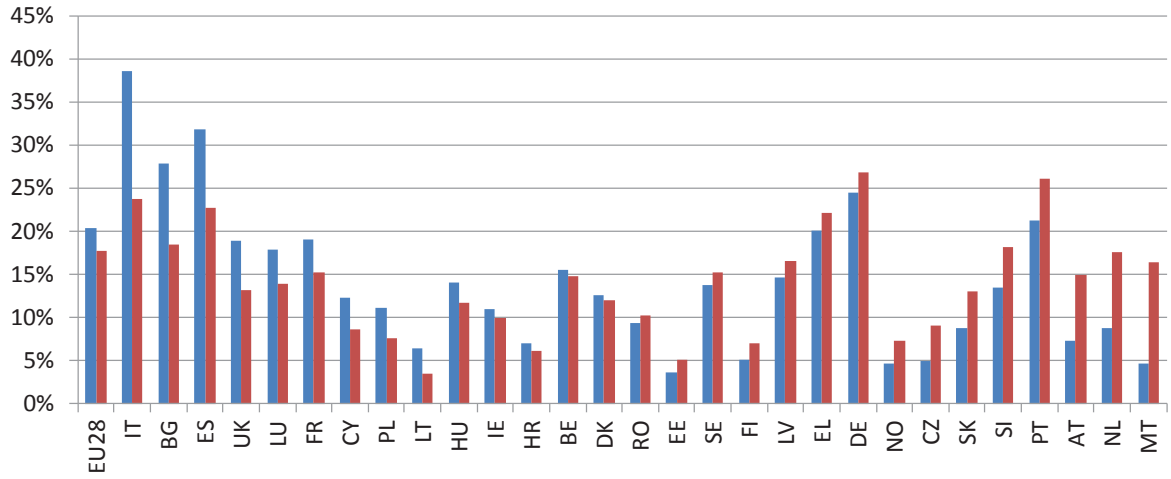
DK, FR, FI, and NO experienced trust problems with e-commerce above the EU average, with no progress in the last five years. Mistrust in RO, MT, SE, LV and PT has risen sharply and is above the EU average (right side of the charts). MT, AT and NL seem to have seen a large drop in trust in online banking services.

Figure 3.9: Security concerns keeping individuals from e-shopping, EU-28+, 2015 (% internet users)



Source: Eurostat

Figure 3.10: Security concerns keeping individuals from e-banking, EU-28+, 2015 (%internet users)



Source: Eurostat

In some countries security concerns are keeping internet users away from e-commerce, while in others, they inspire more selective defensive behaviour

Internet users can be divided into four groups, according to whether they have purchased online (yes/no), and whether security concerns limited or kept them away from e-commerce (yes/no).

At EU level, 9 % of internet users (red segment) are completely deterred from buying online by their concerns. It is an important issue to address to develop the Digital Single Market, and in countries like PT and RO it involves 20 % or more persons.

For another 10 % of EU internet users (green segment), security concerns seem to simply limit shopping online. The phenomenon could be interpreted as depending on internet users' capacity to distinguish which websites do or do not deserve trust, and in which situations, such as when using public wifi, it is preferable not to conduct money transactions.

The countries where this selective defensive behaviour seems more developed are: SE, NO, FI, FR, DK, MT, ES and NL.

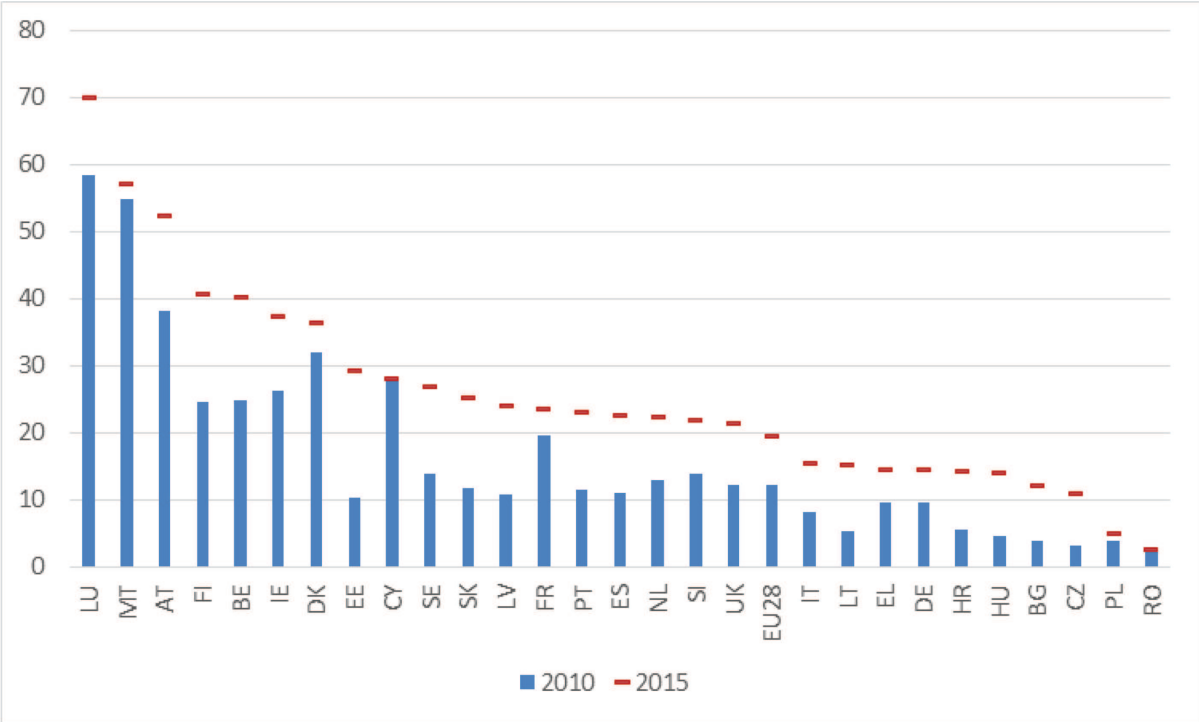
Figure 3.11: Security concerns and their impact on eCommerce, EU-28+, 2015 (% internet users)

Source: *Commission services based on Eurostat data*

eCommerce: Individuals ordering cross-border goods or services online

While 53 % of citizens shop online, only 16 % engage in cross-border eCommerce. While cross-border online shopping is advancing, it is doing so rather slowly, having increased 7 percentage points over the last five years. The differences between Member States are quite big, ranging from Luxembourg, at 68 %, to Romania with under 2 % of people shopping online with sellers from other EU countries.

Figure 3.12: Individuals that ordered goods or services for private use over the internet in the last 12 months from sellers from other EU countries



Source: European Commission, Digital Scoreboard

The 2015 survey of online consumers showed that, for cross-border purchases from other EU Member States, delivery costs (27 %), high return shipping costs (24 %) and long delivery times (23 %) are among the main consumer concerns. A large number of perceived obstacles relate to key consumer rights, such as return and replacement (getting a faulty product replaced or repaired, 20 %; returning a product consumers did not like and getting reimbursed, 20 %). Concerns related to redress were also frequently quoted, i.e. the difficulty of solving problems if something goes wrong (23 %).

More than half of EU Internet users use online banking

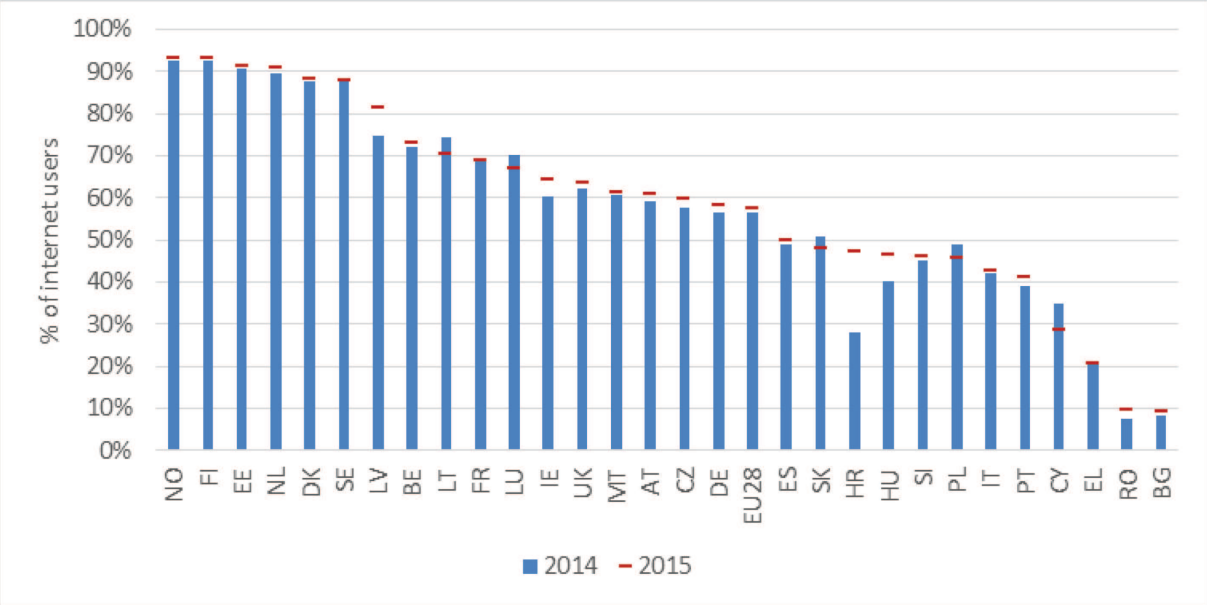
Online banking is a common activity among internet users. **More than half** of internet users in the EU **transact with their bank online**.

High shares of internet users doing online banking are recorded in **Finland (93 %), Estonia and the Netherlands (91 % each)** for 2015. The differences between Member States are big, with **Bulgaria (9 %)** and **Romania (10 %)** having the lowest figures**.**

Concerning progress in the EU overall, **from 2010 to 2015 the percentage** of internet users doing online banking **increased slightly** from 52 % to 57 %. Between 2014 and 2015 there was no change.

Countries with high levels of online banking among internet users also tend to have high rates of eCommerce.

Figure 3.13: Individuals who have used the internet, in the last 3 months, for internet banking



Source: European Commission, Digital Scoreboard

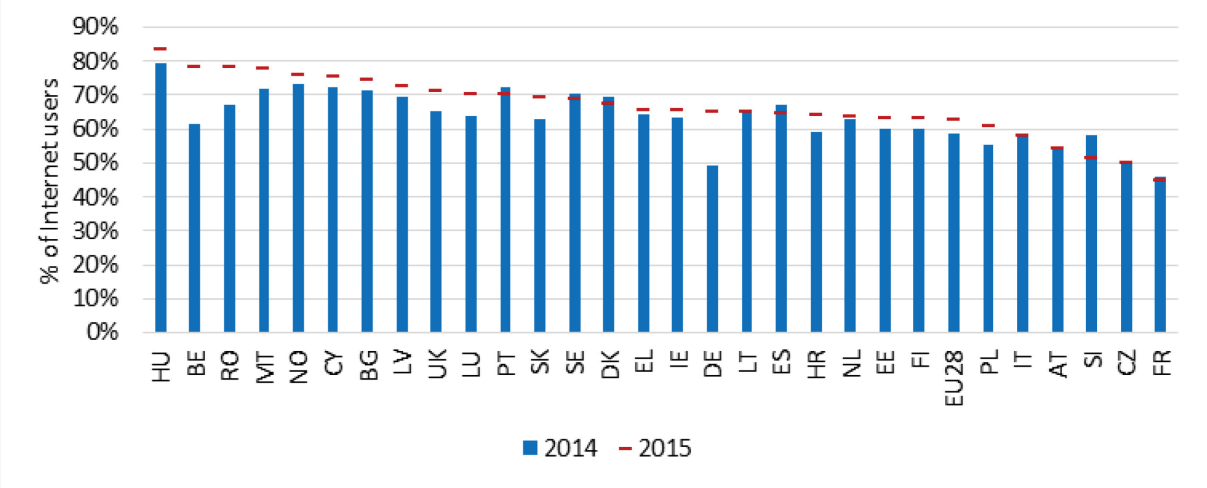
Participation in social networks online is still increasing

Social networks have been around for some time and are a common and popular activity among internet users. In 2015, 63 % of internet users participated in social networks. Among 16- to 24-year-olds, the rate of users is close to saturation at 90 %, while the older age groups still see growth in the number of users. Participation in social networks online is an activity with a high frequency of use and all groups see growth in time spent on social networks. While Facebook is the dominant platform, there are several different choices. The higher the age, the more dominant Facebook is as the choice of network. Among younger people, other services are more frequently used.

The country with the biggest proportion of internet users on social networks is Hungary, with 83 %. Belgium, Malta and Romania follow with 78 % of users each.

Most European countries saw an increase in the number of social network users between 2014 and 2015. Belgium and Germany had big increases of 16 or 17 percentage points. Some countries saw small declines. France has the lowest share of users and has not seen any increase over the last four years. This was also the situation in Germany until a sudden increase in 2015.

Figure 3.14: Individuals who used the internet in the last three months to participate in social networks



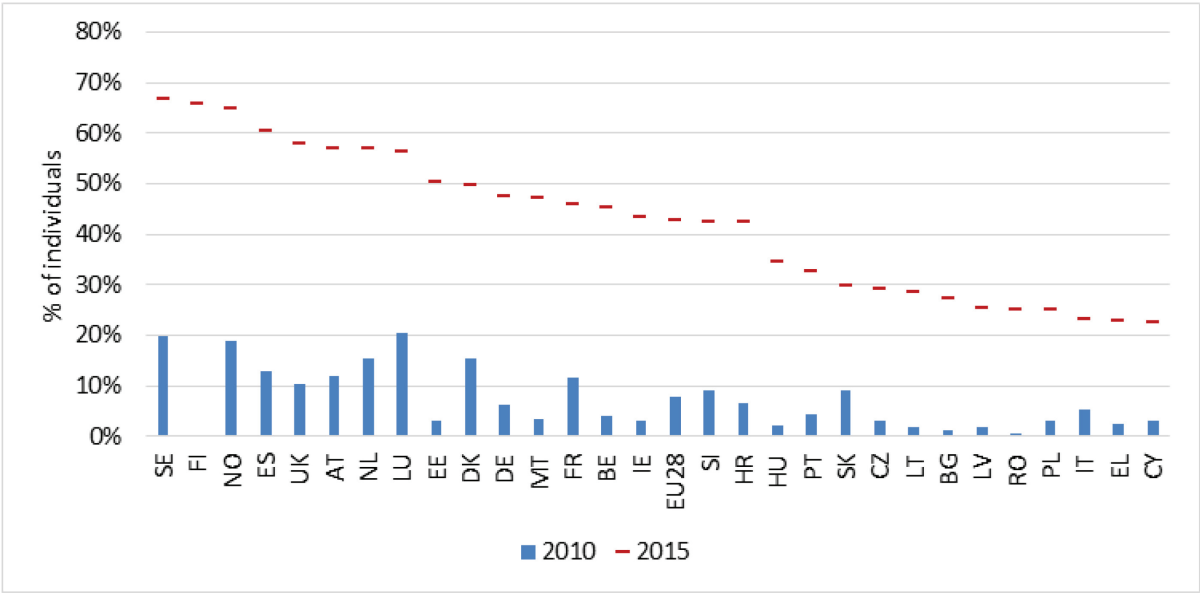
Source: European Commission, Digital Scoreboard

The internet becomes mobile

Mobile use of the internet in Europe really started to take off around 2010. Today 43 % of the population (aged 16-74 years) use their mobile phone to access the internet when they are away from home or work. Mobile internet increases the opportunity to access online services. Some countries like Finland and Sweden have seen steep growth over the last five years and are approaching 70 % of users. Yet, these countries still have high rates of growth.

If growth in use continues, mobile devices could be expected to overtake computers as the primary tool for accessing services and content online. There is of course a correlation between internet use in general and the use of internet on a mobile phone. Still, some countries have a higher rate of mobile users among their internet users than others. In Spain, 80 % of internet users are mobile, while in Cyprus the number is only 32 %.

Figure 3.15: Individuals using a mobile phone or smart phone to access the internet in the last three months



Source: European Commission, Digital Scoreboard

4. Integration of Digital Technology

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

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 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.

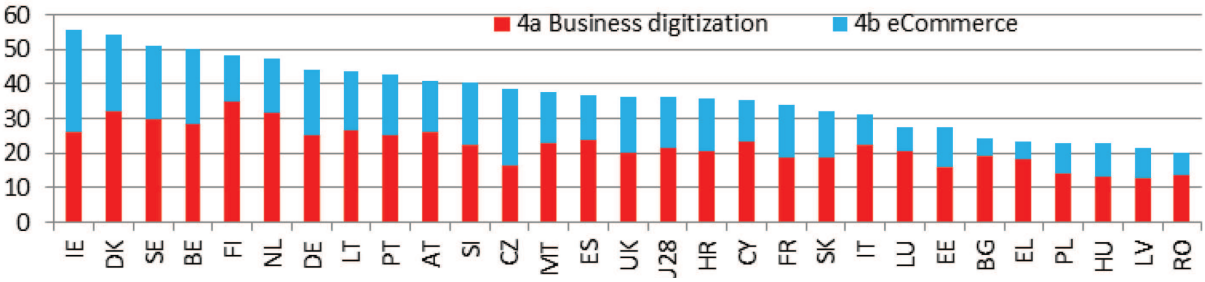
Figure 4.1: Indicators included in the Integration of Digital Technology dimension of the DESI 2016:[12]

	EU-28
4a1 Electronic Information Sharing % enterprises (no financial sector, 10+ employees)	36 % (2015)
4a2 RFID % enterprises (no financial sector, 10+ employees)	n.a.
4a3 Social Media % enterprises (no financial sector, 10+ employees)	18 % (2015)
4a4 eInvoices % enterprises (no financial sector, 10+ employees)	n.a.
4a5 Cloud % enterprises (no financial sector, 10+ employees)	n.a.
4b1 SMEs Selling Online % SMEs (no financial sector, 10-249 employees)	16 % (2015)
4b2 eCommerce Turnover % turnover of SMEs (no financial sector, 10-249 employees)	9.4 % (2015)
4b3 Selling Online Cross-border % SMEs (no financial sector, 10-249 employees)	7.5 % (2015)

Source: European Commission, Digital Scoreboard

Figure 4.2: DESI 2016, Integration of Digital Technology dimension, by country

[12] The year referred to in the table (and in the rest of the chapter) is the survey year, but for the eCommerce variables (e.g. 4b1, 4b2, 4b3), the reference year is the preceding year (i.e. 2014) .



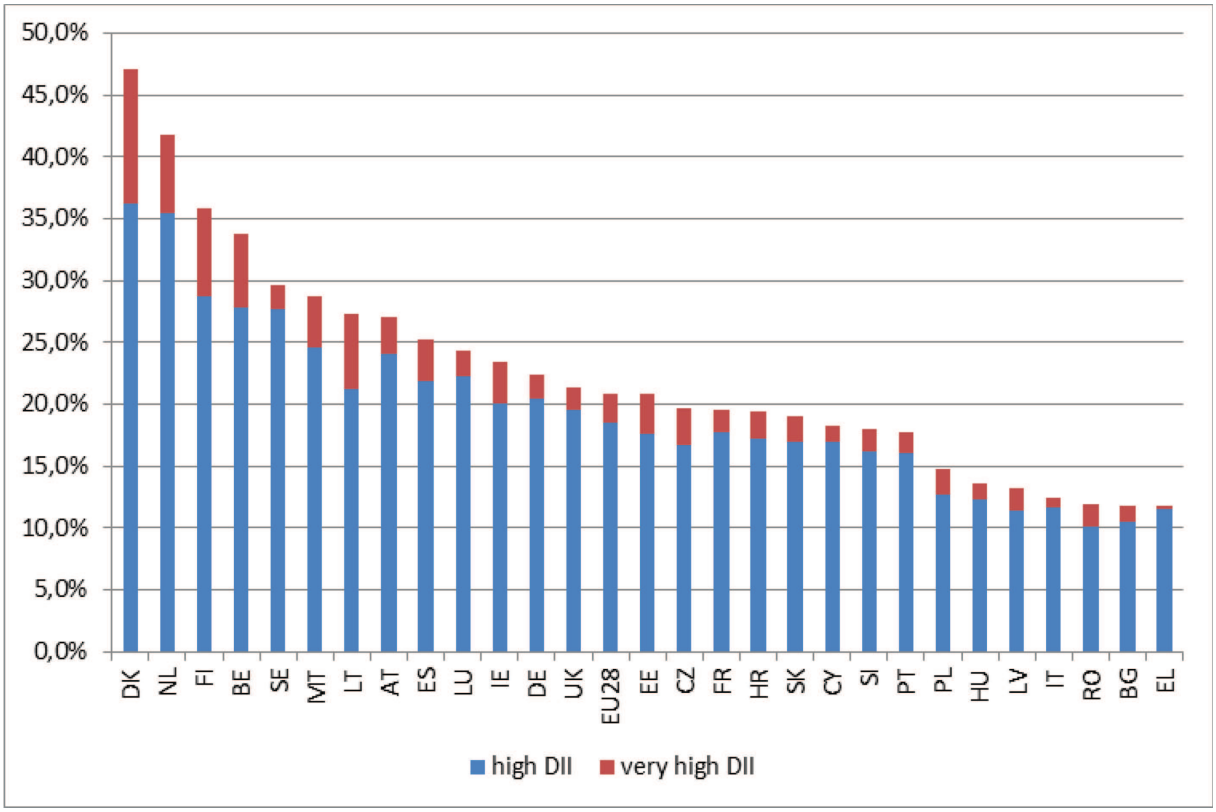
Source: European Commission, Digital Scoreboard

Only one company out of five in the EU-28 is highly digitised, but the situation across countries is varied: from one out of two in Denmark to one out of nine in Greece and Bulgaria.

The Digital Intensity Index (DII) is a micro-based index that measures the availability to the firm of 12 different digital technologies: the 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, website, a website with sophisticated functions, social media, ERP, CRM, electronic sharing of supply chain management information, eCommerce turnover accounting for over 1 % of total turnover, business-to-consumer (B2C) web sales of over 10 % of total web sales. The value for the index therefore ranges from 0 to 12.

Only in five 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, NL, FI, BE and LT. In the first four countries at least one third of firms also have a high or very high DII (i.e. firms have at least 7 out of the 12 monitored digital technologies). In IT, RO, BG and EL, less than one firm out of eight has invested heavily in digital technologies (i.e. has a high DII).

Figure 4.3: Percentage of enterprises with a high (>6) or very high (>9) Digital Intensity Index across EU countries (2015)

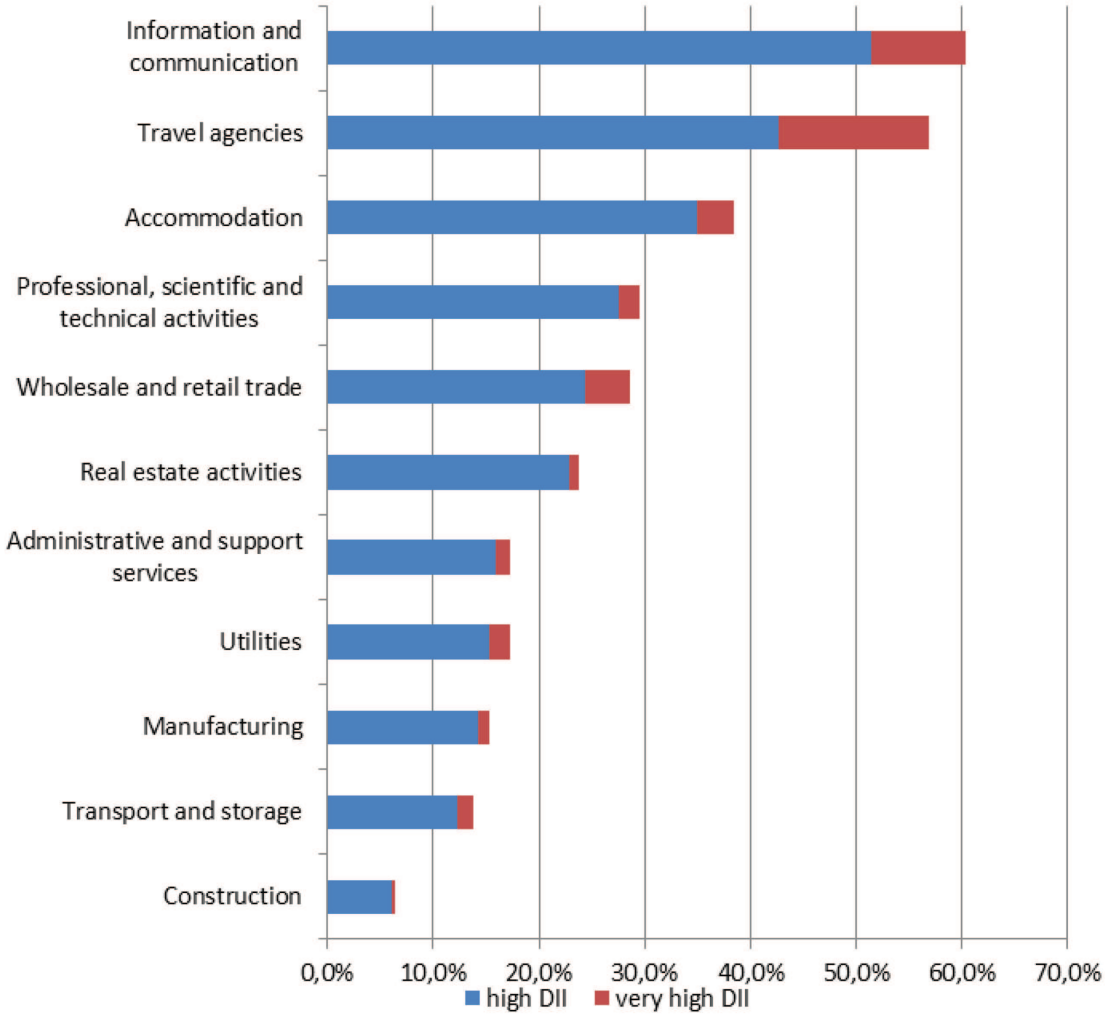


Source: Eurostat

In some economic sectors[13] digital business models are clearly visible (e.g. travel agencies, accommodation) while other sectors have strictly analog business models (e.g. construction)

It was expected that businesses in the information and communication services sector would have high levels of digitisation (60 %). However, the extent to which some sectors have been transformed by the emergence of digital business models is perhaps more surprising. In the travel agency sector, 57 % of businesses are high adopters of digital technologies. In the accommodation sector, 38 %have a high or very high DII. Some sectors are still impervious to digital change: in the construction sector only 6 % of firms have a high or very high DII.

Figure 4.4: Percentage of enterprises with high (>6) or very high (>9) Digital Intensity Index across economic sectors (2015)



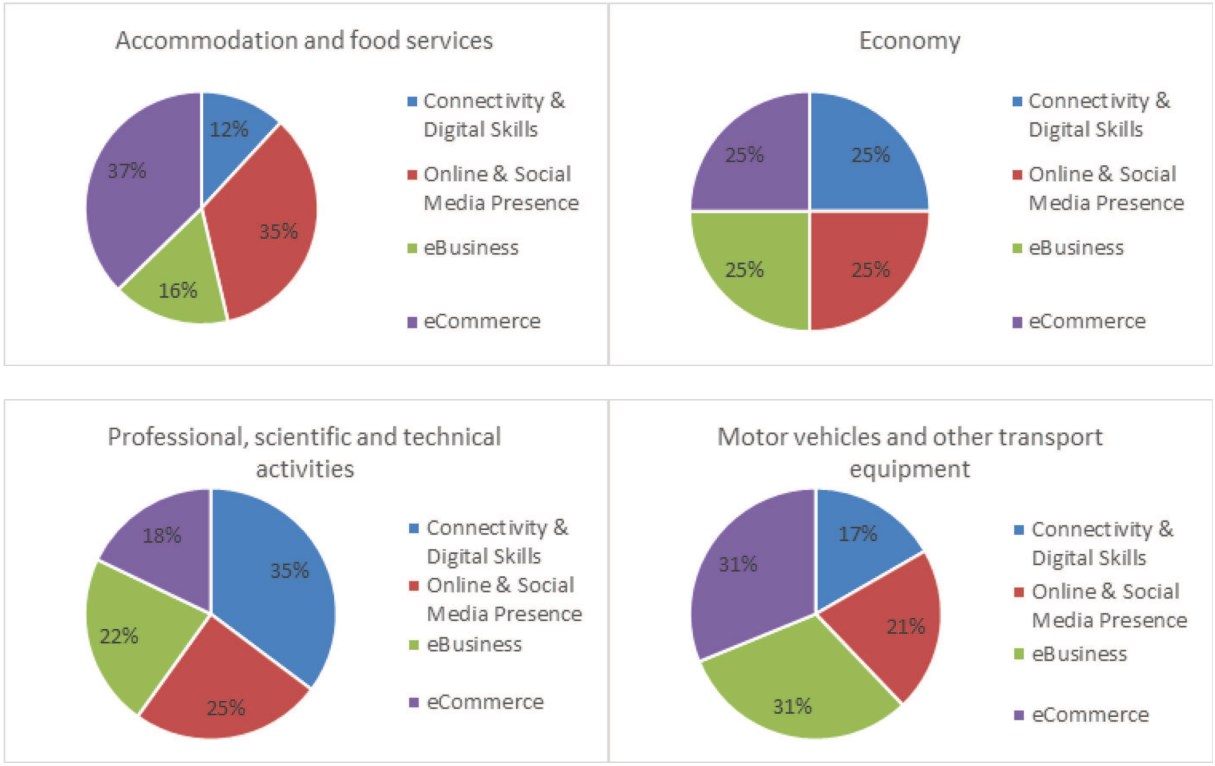
Source: Eurostat

[13] The surveyed sectors include all the market economy with the exception of financial services, agriculture and mining (i.e. NACE rev 2 sectors 10 to 63 and 68 to 82).

The diversity of digital tools adopted in different economic sectors reflects the diversity of digital business models adopted by their enterprises

By looking in more detail at the ICT solutions adopted by firms in different sectors we discover differences not only in level but also in composition. For example, businesses that produce motor vehicles and transport equipment invest more heavily in eBusiness (e.g. ERP, CRM) and do more eCommerce than the rest of the economy. On the other hand, businesses in the accommodation and food services sector need to have well-developed websites and social media to remain competitive, and their online sales channel is very important to them. For professional, scientific and technical activities' firms it is very important to have a well-developed broadband infrastructure and lots of connected employees and ICT specialists.

Figure 4.5: ICT solutions adopted in different economic sectors



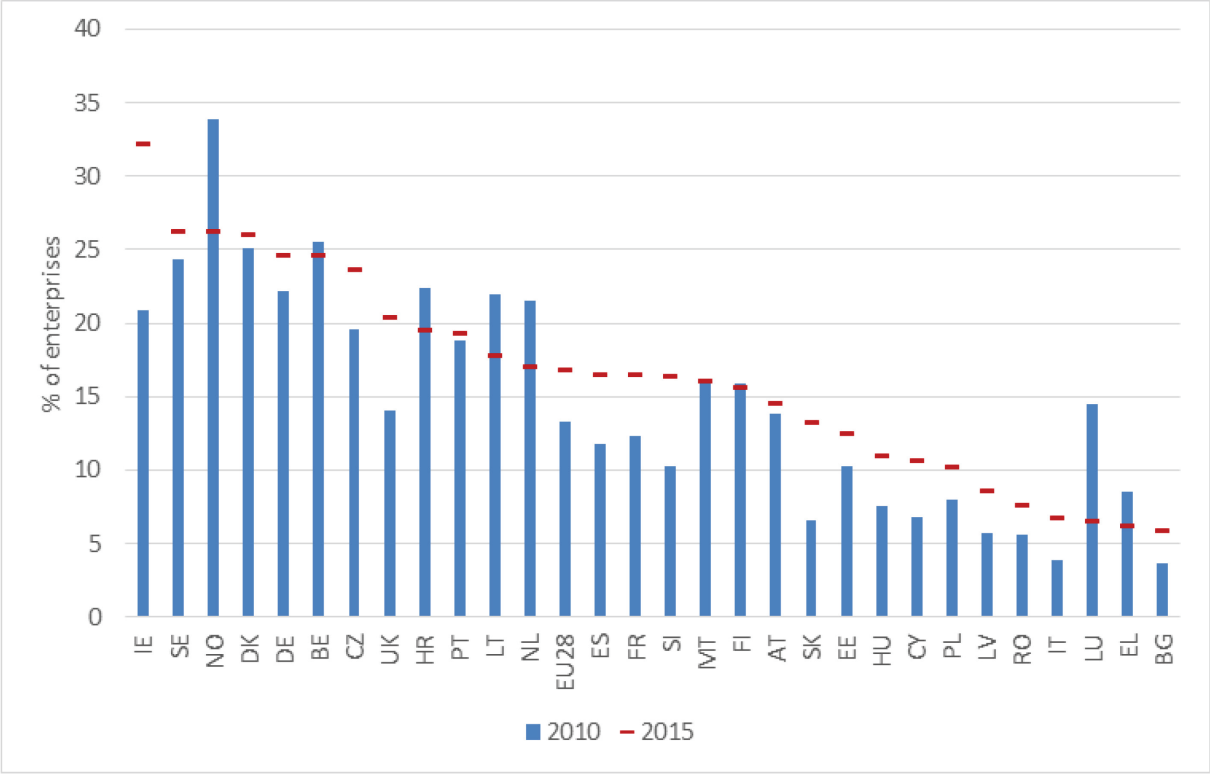
Source: European Commission calculations based on Eurostat data

eCommerce — slow progress in digital sales by companies in Europe

Progress in online sales by European companies is slow. 16.8 % of them sell online, which represents an increase of only 3.5 percentage points over five years. Ireland saw a bigger than average increase and is in the lead.

Large companies are more active, with 38 % selling online. This represents a gain of 7 % points over the last five years. Thus the gap between SMEs and large companies is increasing.

Figure 4.6: Enterprises using a computer network for sales (at least 1 %) during the previous year (2010 2015)



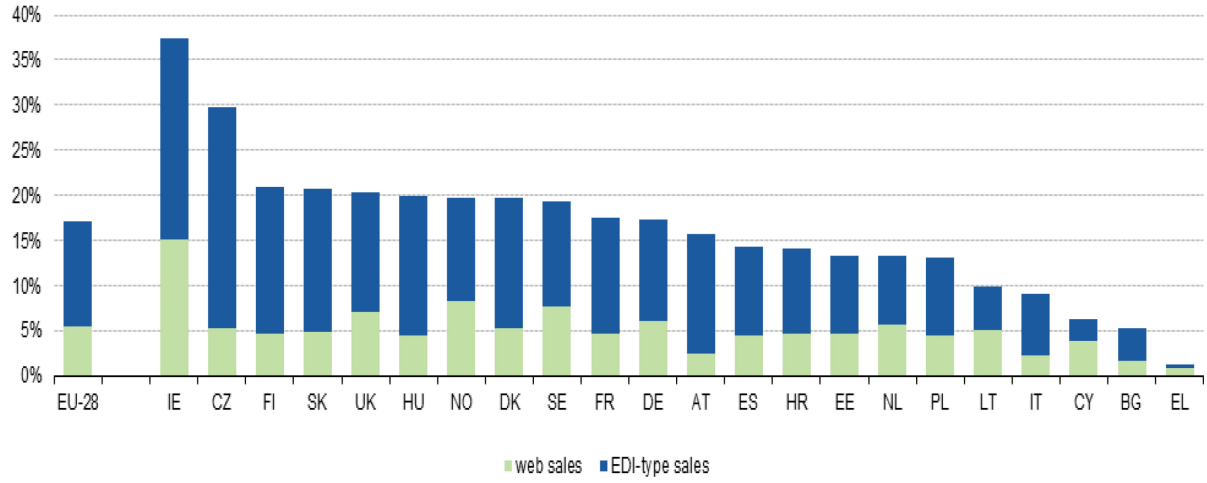
Source: Eurostat

Web and EDI as different types of eCommerce

eCommerce can be broadly divided into two types: web sales and EDI-type[14] sales, according to the way customers place orders for products. In the EU-28, firms made 17 % of their total turnover from e-sales in 2015. Turnover from *EDI-type sales* accounted for 12 % of total turnover, while the turnover from *web sales* accounted for only 5 %.

That 5 % was made up of 3 % from e-sales to other enterprises and public authorities and 2 % from e-sales to private consumers. The share of total turnover obtained from *EDI-type sales* ranged from less than 1 % in Greece to 24 % in the Czech Republic and 22 % in Ireland. The share of total turnover from *web sales* ranged from 1 % in Greece to 15 % in Ireland.

Figure 4.7: Turnover from online sales as percentage of total turnover, split between EDI-type sales and web sales (2015)



Source: Eurostat

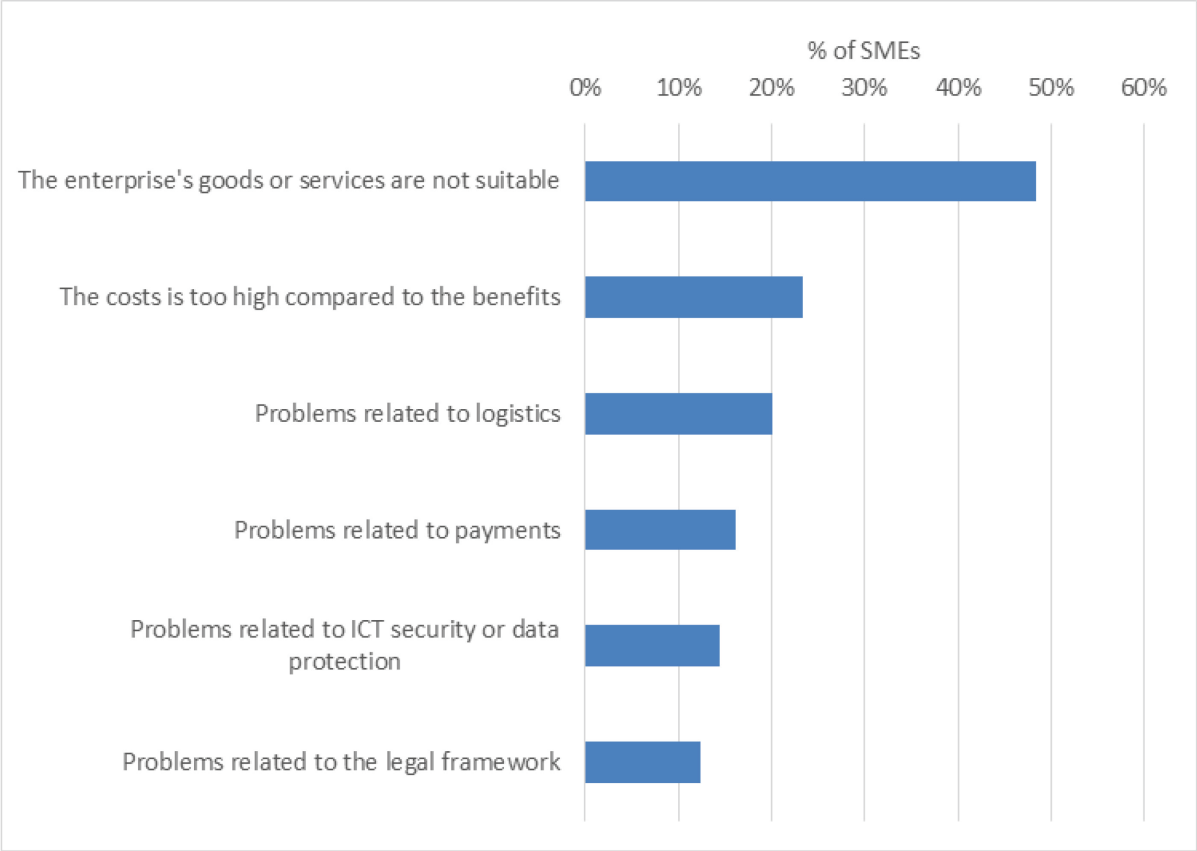
[14] EDI stands for Electronic Data Interchange and it is a standard for the electronic transmission of data suitable for automated processing. It's normally a standard used in B2B transactions to exchange documents such as purchase orders and invoices.

Obstacles for SMEs to sell on the web

SMEs (10-249 employees) that do not sell on the web give as their main reason that their products and services are not suitable. This might be reflected by the second most common obstacle: that the cost of investing in web sales is too high compared to the benefits.

In general, SMEs are more concerned about most of the barriers to online sales than large firms. Selling online requires an up-front investment (in money but also in time, e.g. to research legislation) which larger companies can afford more easily.

Figure 4.8: Reasons for SMEs not selling online (15[15] European countries, 2015)



Source: Eurostat

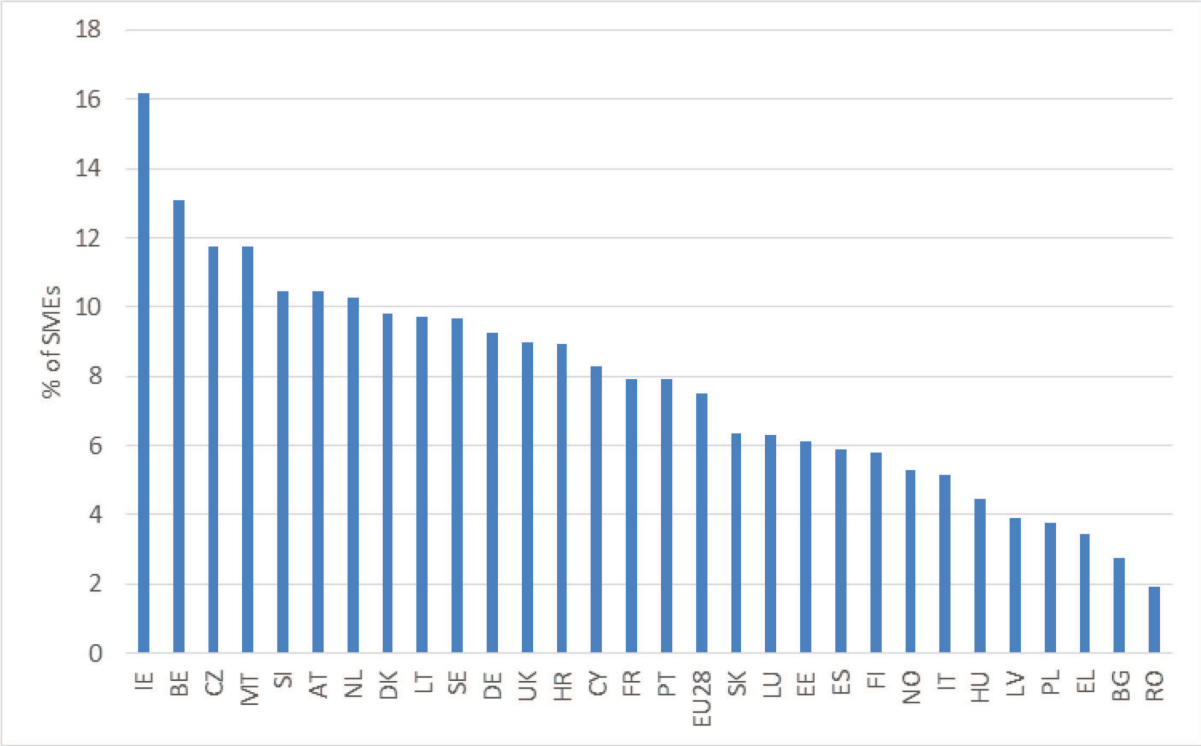
[15] AT, BG, CY, DK, EE, EL, HR, HU, LT, LU, MT, NO, PL, SI and SK.

Cross-border eCommerce among SMEs

Businesses benefit from cross-border e-commerce by exploiting economies of scale which reduce costs, increase efficiency and promote competitiveness, improving total factor productivity. In many cases, without these economies of scale an online business might not be viable at all. This could be especially important for SMEs that remain confined to a small home market with high production costs.

However, only 7.5 % of European SMEs sell online to other Member States, an increase of 1 percentage point since 2013. At the same time 23 % of large enterprises do so.

Figure 4.9: SMEs (10-249 persons employed) with electronic sales to other EU countries in the last calendar year (2015)



Source: European Commission, Digital Agenda Scoreboard

EU businesses are still not well-enough prepared to face security risks

Having a formal security policy is a basic requirement for effectively addressing threats. This was true for 64 % of large firms in 2010, and now 72 %. But 11 % had not reviewed their security plans in the previous two years, so they risk becoming outdated in a quickly changing environment.

SMEs are more rarely equipped with security plans, (nevertheless improving from 24 % to 30 % between 2010 and 2015), but the main difference between them and large business is that they rely mainly on external suppliers to run such specialist functions, justifying recent attention to reinforcing EU industry in this field.

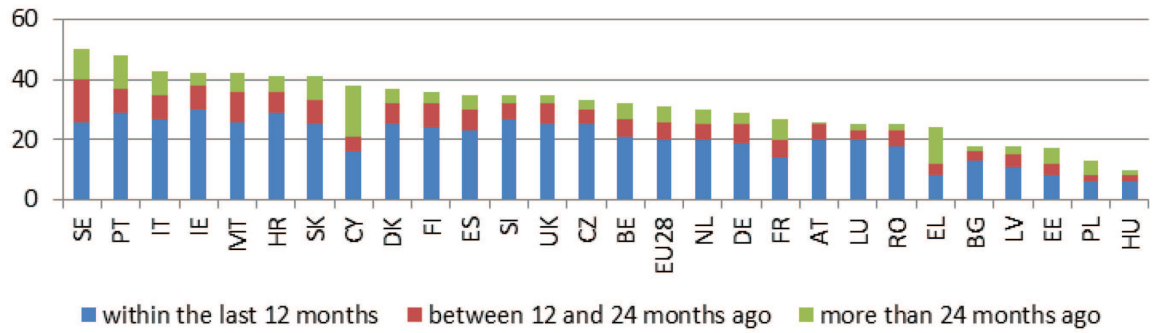
Only 20 % of EU companies have recently updated their security plans.

Figure 4.10: Percentage of enterprises with a formally defined ICT security policy by size of enterprise (2015) and degree of outsourcing

Enterprises with a formally defined ICT security policy (as of 2015)		
	Yes	No
Large enterprises (250+)	72.3 %	27.4 %
SMEs (10-249)	30.4 %	65.5 %
If yes, who mainly performs security and data protection ICT specialist functions?		
	External suppliers	Own employees
Large enterprises (250+)	22.8 %	47.6 %
SMEs (10-249)	17.8 %	11.0 %

Source: Eurostat

Figure 4.11: Percentage of enterprises with a formally defined ICT security policy by date of latest update (2015)



Source: Eurostat. Missing: LT

5. Digital Public Services

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

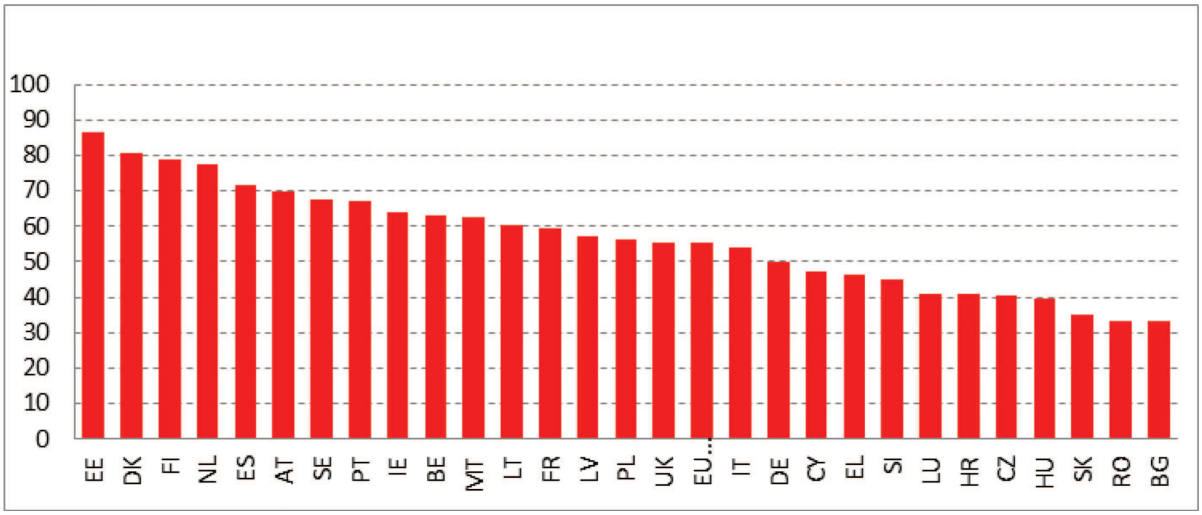
The Digital Public Services dimension consists of four indicators: the percentage of internet users who have sent completed forms to a public administration via the internet (eGovernment users indicator); the level of sophistication of a country's eGovernment services (the pre-filled forms indicator, 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 2016:

	EU-28 value
5a1 eGovernment Users % individuals (aged 16-74) who used Internet in the last year	32 % (2015)
5a2 Pre-filled Forms Score (0 to 100)	49 % (2015)
5a3 Online Service Completion Score (0 to 100)	81 % (2015)
5a4 Open Data Score (0 to 700)	351 (2015)

Source: European Commission, Digital Scoreboard

Figure 5.2: DESI 2016, Digital Public Services dimension, by country

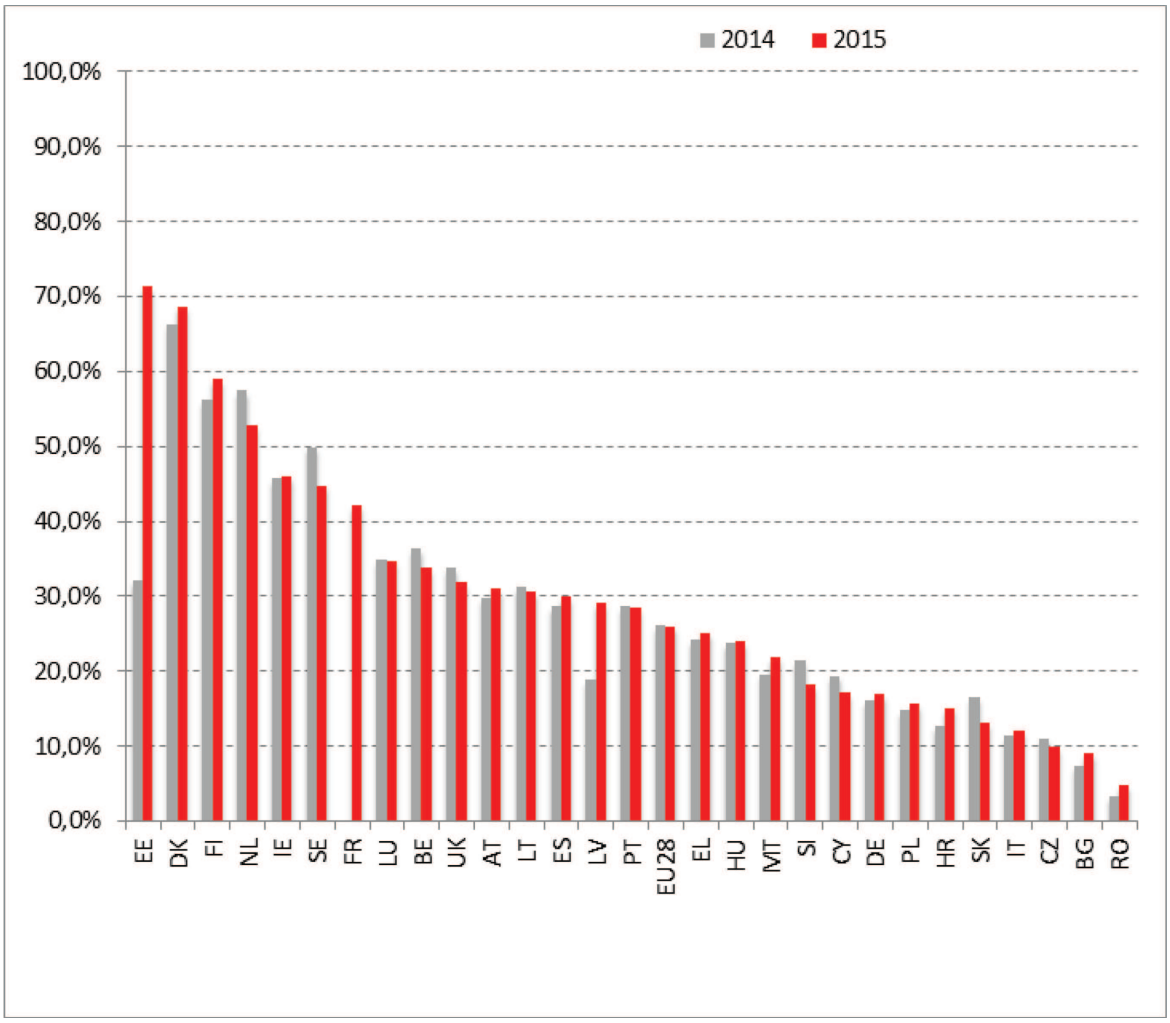


Source: European Commission, Digital Agenda Scoreboard

eGovernment usage has levelled out

In 2015, **interactive eGovernment services** were used by 26 % of the EU-28 population, the same level as the previous year. Usage increased in 15 out of 28 countries, while in NL, SE, LU, BE, UK, LT, PT, SI, CY, SK, and CZ usage fell or remained the same in 2015 (although NL and SE are close to saturation). In three countries (RO, BG, and CZ) less than a tenth of the population submit completed forms online, with generally little progress in catching up (except for CZ).

Figure 5.3: Citizens submitting filled forms via the internet in the last 12 months (% of total population)

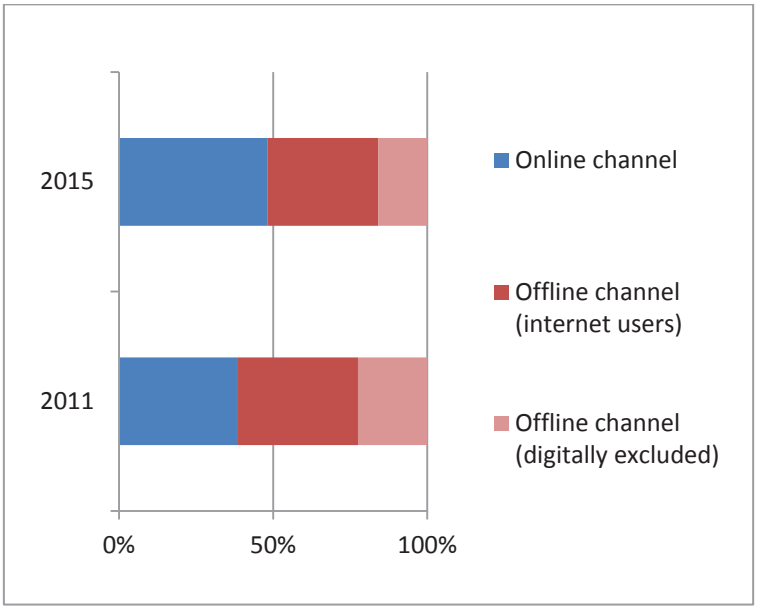


*Source: Eurostat. * EE data exhibits break in series, FR data for 2014 is missing*

Almost half of the population needing public services choses the online channel. The main reason for non-use is recourse to intermediaries.

Of people needing to submit forms to the public administrations,[16] 48 % chose the online channel in 2015, an increase of 10 percentage points from 2011. This is the result of both a fall in the percentage of the digitally excluded (from 23 % to 16 % of the total) and a fall in popularity of offline channels among internet users (by 3 percentage points). However, there is still great untapped potential (52 %) for use of eGovernment services. While this could be addressed in part by increasing digital skills (to increase both internet use and the skills of internet users, see below), some further policies on the supply side may be needed.

Figure 5.4: eGovernment usage potential (preferred channel for submitting forms to public authorities by citizens)

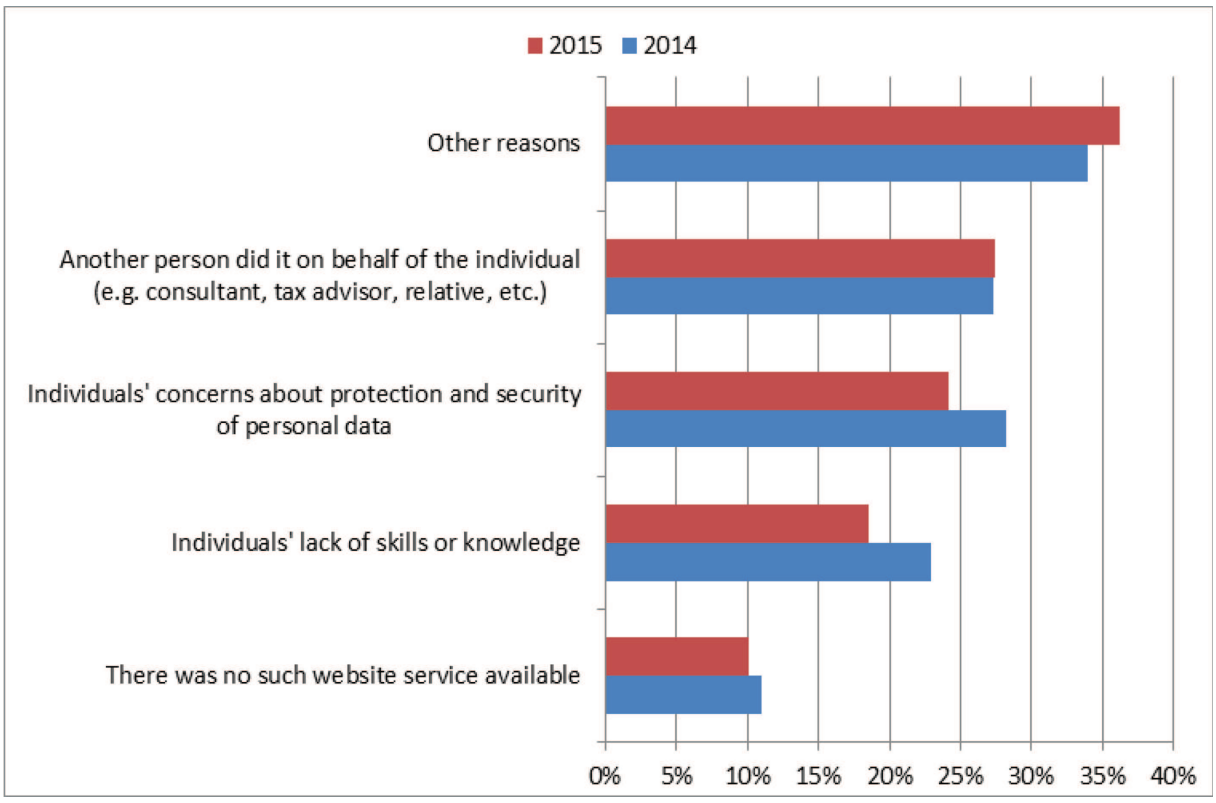


Source: European Commission calculations based on Eurostat data

[16] 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).

Personal characteristics are less of a barrier to non-use of the online channel than in 2014: lack of skills or knowledge is down from 23 % to 19 % while concerns about protection and security of personal data are down from 28 % to 24 %. The main specific factor is the use of intermediaries (both professionals and acquaintances), at 27 % of cases (unvaried). These may be used in some cases for convenience and in others for lack of skills. Lack of supply/awareness still accounts for 10 % of cases of non-use. Other reasons account for 36 % of the cases.

Figure 5.5: Reasons for not submitting official forms through the online channel (% of Internet users needing to submit official forms)



Source: Eurostat

The measurement of eGovernment supply, some methodological notes

The supply side of eGovernment is measured through a 'user journey' approach. Researchers pose as ordinary users of eGovernment services in an 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.	Seven life events are analysed over two years (with data for three complete measurements in 2012-2013, 2013-2014 and 2014-2015) in different areas of government: - losing/finding a job - enrolling at university - moving - starting a small claims procedure - buying/owning a car - starting a business - regular business operations.

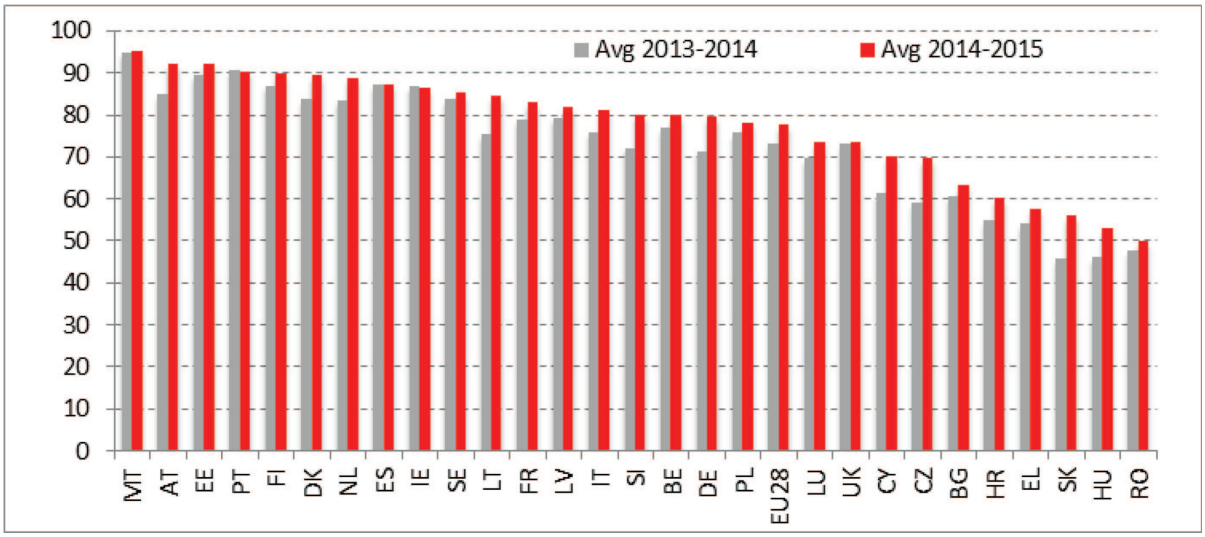
This new method looks at different aspects of service provision, but the two examined here are the following: user-centricity and transparency. The User-Centric eGovernment indicator measures the availability of eGovernment services, their connectedness and their user-friendliness. The Transparent eGovernment indicator measures the online transparency of government in different aspects of online service delivery, treatment of citizens' personal data and the activities of public administrations. Both indicators range from 0 (complete absence of required features) to 100 (all features included).

The source for the eGovernment supply data is the eGovernment Benchmark Report (see **https://ec.europa.eu/digital-agenda/news-redirect/16475**)

There is progress in supplying eGovernment, especially by those catching up. Transparency is increasing for most countries but more is needed to win trust.

Five countries in the EU-28 are very close to having a fully developed digital channel for public services with scores above 90 %: MT, EE, LT, PT and AT. Those at the bottom are catching up, with all countries now scoring 50 or above, with most progress made by SK and CZ.

Figure 5.6: User-Centric government (2013-2014 and 2014-2015)

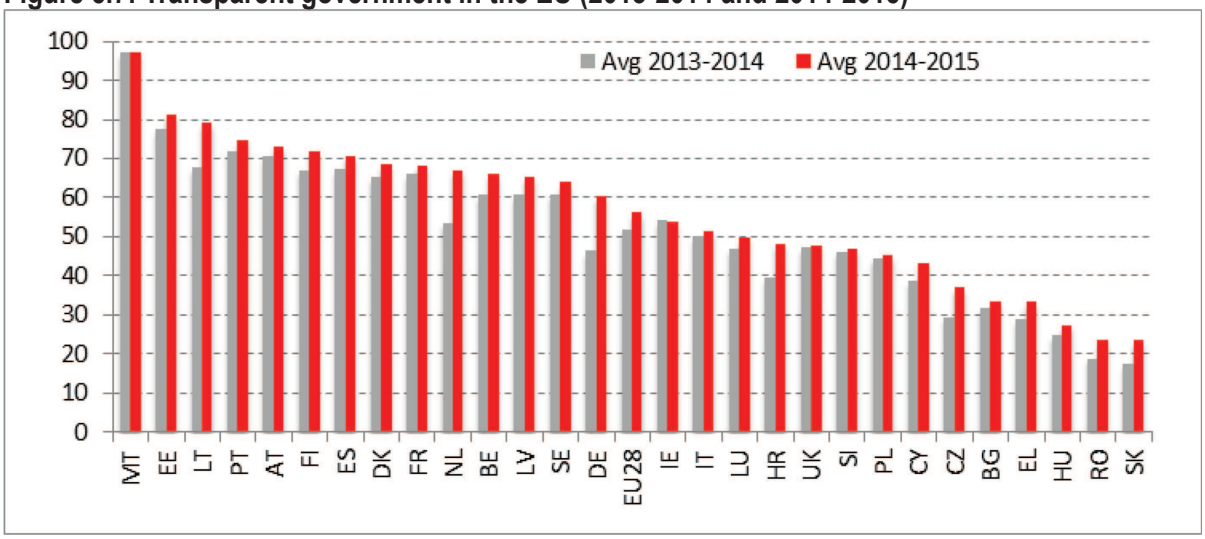


Source: eGovernment Benchmark Report

Transparency is an important element for increasing the take-up of online public services, since it helps build citizens' trust in public administrations.

Transparency has improved with respect to the previous year in almost all countries, with average EU-28 progress of 4pp. But more progress is needed to gain users' trust.

Figure 5.7: Transparent government in the EU (2013-2014 and 2014-2015)



Source: eGovernment Benchmark Report