

## Chapter D Enterprises and ICT

*Progress in the development of digital economy is considered crucial for the improvement of competitiveness of any country's economy. Information and communication technologies (ICT) have rapidly become an integral part of enterprises, and their usage has significantly influenced their functioning. The ICT has not only been involved in inter-company communication, information sharing with business partners or as a means of communication with their customers, but digitalisation has gradually become an increasingly common part of nearly all business processes.*

*This chapter, devoted to enterprises, provides the monitored development of spreading, and using the modern ICT, as well as applications relevant thereto among business entities since 2002, when the CZSO first realised its own survey on the usage of information technologies among enterprises<sup>1</sup>. The source of international comparison of key indicators is the Eurostat database<sup>2</sup>, which was last updated in mid-December 2017.*

### D.1 Enterprises and computer networks

*The interconnection of computers, or other ICT devices in company networks, has been bringing many benefits to companies, as opposed to a situation, where these devices would exist independently. These benefits include, for instance, the possibility of data transfer or sharing, communication between employees, shared internet connection, and, above all, the integration and automation of individual activities performed within a company.*

#### Use of internal computer network

- In January 2017, **internal computer network**<sup>3</sup> could be found in more than three quarters of Czech enterprises with 10+ employees. During the previous decade, the number of enterprises using **wireless technologies** within their internal computer network, has increased significantly. Ten years ago, in January 2007, wireless connection to the internal computer network was used by approximately a fifth of monitored enterprises. In January 2017, there were nearly two thirds of them (64%). This means, that the share of such enterprises tripled in the past decade.
- The equipment of enterprises, with an internal computer network, varies with respect to their **prevailing/main economic activity (NACE categories)**. The local computer network is most frequently used by enterprises from the “*Information and communication activities*” (NACE J) (97%) or “*Professional, scientific and technical activities*” (NACE M) (85%) sectors where you can find firms with main economic activity, for instance, the provision of lawyer services, accounting services, research and development, market research, etc. The internal computer network, as well as other ICT, are least frequently used by enterprises belonging to the “*Food and beverage services*” sector (NACE I), where in January 2017, they were used by less than a half (44%) of all enterprises with 10+ employees in this NACE category. This is mainly due to the fact that, as opposed to other industries, this sector is highly represented by small enterprises.

#### Enterprises with intranet and extranet

- In the same month, **intranet** (internal website) was operated by less than a third of enterprises in the Czech Republic. This share has been relatively stable in the past few years. According to the outputs of

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<sup>1</sup> The detailed information on the expansion and manner of usage of the selected ICT by enterprises is monitored within the scope of Selective Survey on ICT usage in the business sector (ICT 5-01). The survey is carried out by means of a **sample survey of approx. 9 thousand enterprises with 10+ employees of selected industries**. Since 2006, the survey is carried out yearly in all EU countries as a **mandatory survey stipulated by the Regulation (EC) No. 808/2004 of the European Parliament and of the Council** concerning Community statistics on the information society. For more details see: [https://www.czso.cz/csu/czso/podnikatelsky\\_sektor](https://www.czso.cz/csu/czso/podnikatelsky_sektor)

<sup>2</sup> <http://ec.europa.eu/eurostat/web/digital-economy-and-society/data/comprehensive-database>

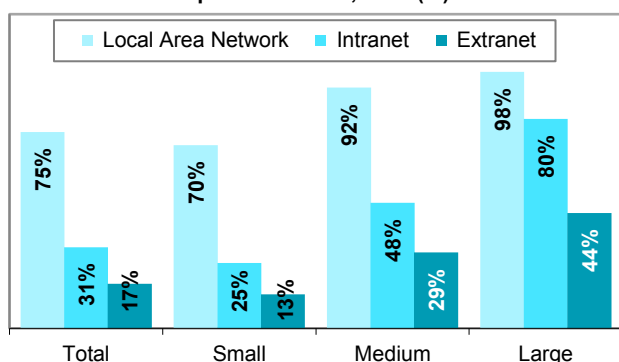
<sup>3</sup> **Enterprises with an internal computer network** shall mean enterprises using an internal computer network interconnecting at least two computers for the purpose of sharing of data, as internal email files, and for communication and internet connection within the enterprise.



the last survey, in January 2017, intranet was operated by 80% of large enterprises, by less than a half of medium-sized ones, and by a quarter of small enterprises.

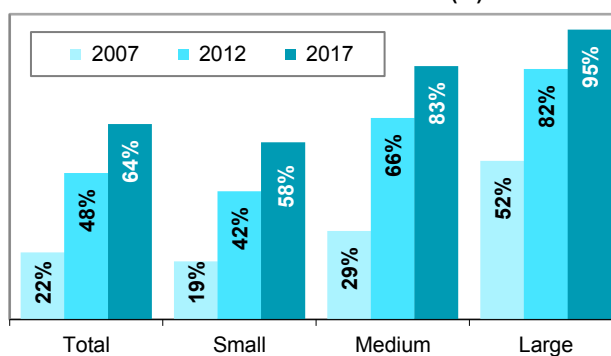
- **Extranet**<sup>4</sup>, i.e. special extension used for communication with entities having their organisation, location or business outside the enterprise's headquarters, was used by less than a fifth of enterprises in 2017. Even in this case, the equipment of enterprises, with this type of website, has not changed significantly in recent years. Extranet was used by large firms more often than by small ones (44% and 13%, respectively).
- When it comes to the equipment of enterprises with an internal computer network, it also applies to intranet and extranet, since these are more commonly used in industries specialised with information and communication activities. The smallest usage is in the food and beverage services sector, where lots of smaller enterprises operate.

**Figure D1 Enterprises in the Czech Republic using computer networks; 2017 (%)\***



Source: Czech Statistical Office 2018, ICT use survey in enterprises

**Figure D2 Enterprises in the Czech Republic with wireless Local Area Network (%)\***



Source: Czech Statistical Office 2018, ICT use survey in enterprises

\* as a percentage of all enterprises with 10+ employees in a given size class

- Increasingly more often, enterprises in the Czech Republic enable their employees to use **remote access** to internal documents, files or applications, available on their computer network. This is typically done by means of a secured internet connection. Whereas in 2010 this option was offered by a third of enterprises, in 2017, it was more than a half (56%). Even among large enterprises, this option is offered to employees more frequently than in small ones (95% and 48%, respectively); there are also significant differences in the prevailing economic activities of the monitored entities.

## D.2 Enterprises with access to the internet

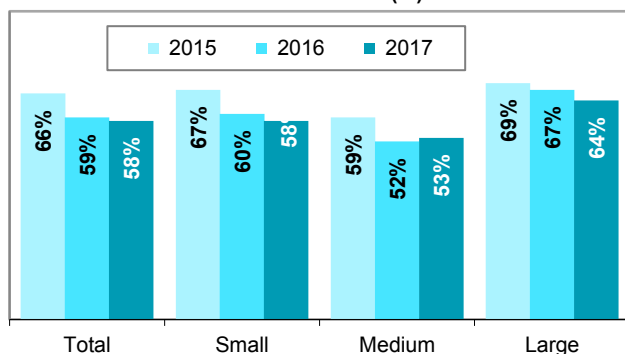
Since the beginning of internet development in the Czech Republic, it was evident that enterprises are to find this technology a very useful, and, with time, a practically indispensable one. Internet usage in Czech enterprises has been increasing much faster than in households. At the beginning of 2017, only 2 enterprises out of 100 were not connected to the internet. It comes as no surprise that in 2000, there were 75% of enterprises with 10+ employees online in the Czech Republic. The situation is very similar in the majority of EU countries. In January 2017, on average, only 3% of enterprises were not connected to the internet. The highest number of enterprises, with no internet access, was recorded in Greece (13%) and in Romania (15%). Therefore, the crucial question is not whether or not an enterprise is connected to the internet, but how it is connected and what the internet is used for.

<sup>4</sup> **Extranet** is a closed network that uses internet protocols to securely share enterprise's information with suppliers, vendors, customers or other businesses partners. It can take the form of a secure extension of an intranet that allows external users to access some parts of the enterprise's intranet. It can also be a private part of the enterprise's website, where business partners can navigate after being authenticated in a login page.

## Type of internet connection used by enterprises

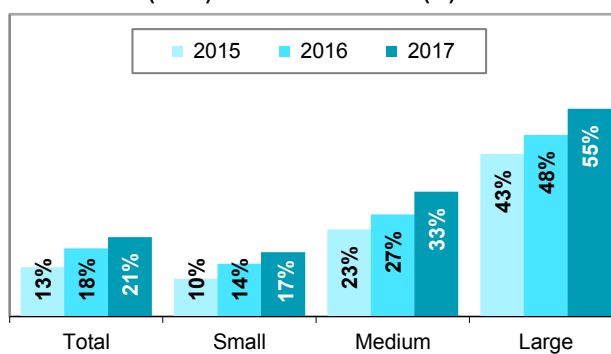
- Over the past few years, there has been a significant change with respect to **technologies** used by enterprises in order to gain internet access. In 2017, nearly a half of enterprises (48%) in the Czech Republic had **mobile internet** access. In 2015, this means of connection was used by less than a third of enterprises (31%). In 2017, mobile internet connection, exclusively, was solely used by less than 1% of enterprises, which means that enterprises using a mobile connection also used another means of fixed internet connection.
- On a long-term basis, another type of **fixed (wired) connection** to the internet in Czech enterprises, has been the connection via **DSL technology**. In January 2017, this means of connection was used by just under 58% of enterprises. In recent years we have been monitoring a decrease in the usage of this technology – in 2015, internet connection via ADSL or another xDSL technology was used by two thirds of enterprises.
- Among EU countries, fixed internet connection is the prevailing one; in January 2017, on average, it was used by 93% of enterprises with 10+ employees. Mobile internet connection (by means of data tariffs from mobile operators) is used by an increasing number of enterprises in the Czech Republic; this trend also applies within the EU28. In 2017, on average, this means was used by 69% of enterprises in **EU countries**, as opposed to less than a third in 2010. Mobile connection to the internet is the most used type in Finnish enterprises; in 2017, it was used by 94% of enterprises compared to 68% in 2010.
- On the other hand, two other types of connection to the internet have been gaining in popularity: **optical internet connection** and **leased line**, provided by operators of telecommunication services. In January 2017, each of these two technologies was used in the Czech Republic by approximately fifth of enterprises with 10+ employees, which is approximately a two-fold share compared to the situation 5 years ago, when they were used by every tenth company.

Figure D3 Enterprises in the Czech Republic using xDSL internet connection (%)\*



Source: Czech Statistical Office 2018, ICT use survey in enterprises

Figure D4 Enterprises in the Czech Republic using fibre (FTTx) internet connection (%)\*



Source: Czech Statistical Office 2018, ICT use survey in enterprises

\* as a percentage of all enterprises with 10+ employees in a given size class

- In January 2017, more than **two types** of fixed internet connection were used in the Czech Republic by seven enterprises out of ten; with respect to large firms it was nine out of ten.

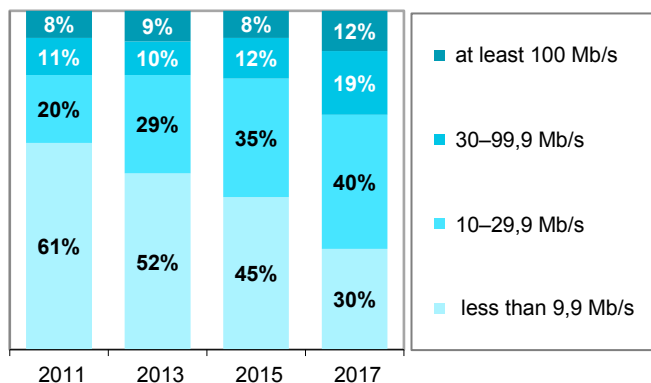
## Speed of internet connection used by enterprises

- With regards to the spreading of new or improved existing technologies used for internet connection, the contractually-binding internet connection download speed of Mbit/s has been increasing year by year, with the fastest fixed internet connection in Mbit/s used in enterprises – further below, this term is simplified to **internet connection speed**. In 2015, less than a fifth (19%) of enterprises with 10+ employees in the Czech Republic, claimed to have been using internet connection of 30Mb/s and higher; two years later it was already nearly a third and with respect to large enterprises the percentage was 60%.
- In 2017, the number of enterprises using internet connection enabling downloading of **at least 100 Mb/s** was, as expected, the highest in enterprises operating in the telecommunication industry (68%) or in IT

activities (39%). Opposed to this, the lowest number was found in enterprises operating in the food and beverage services sector or in retail. In both of these industries, it was “only” 7.6% – this low number is again caused by the fact that these industries are highly represented by small enterprises, compared to other industries.

- The prevailing internet connection speed in Czech enterprises, in January 2017, was between 10–29.9 Mb/s (40% of enterprises with internet access). 19% of enterprises with internet access were downloading data with a speed of 30–99.9 Mb/s, and a further 12% of enterprises got connected with speed exceeding 100 Mb/s. In 2017, a download speed lower than 10 Mb/s was only used by less than a third of enterprises in the Czech Republic. Only in 2011, was it the most frequently used speed (61% of enterprises with internet access).

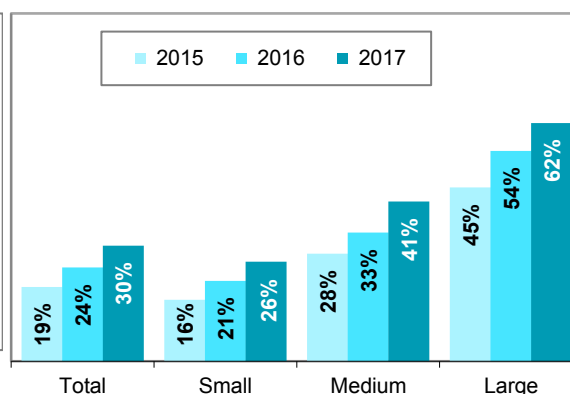
**Figure D5 Internet connection speed used by enterprises in the Czech Republic (%)\***



\* as a percentage of all enterprises with 10+ employees with the internet

Source: Czech Statistical Office 2018, ICT use survey in enterprises

**Figure D6 Enterprises in the Czech Republic with at least 30 Mb/s connection speed (%)\***



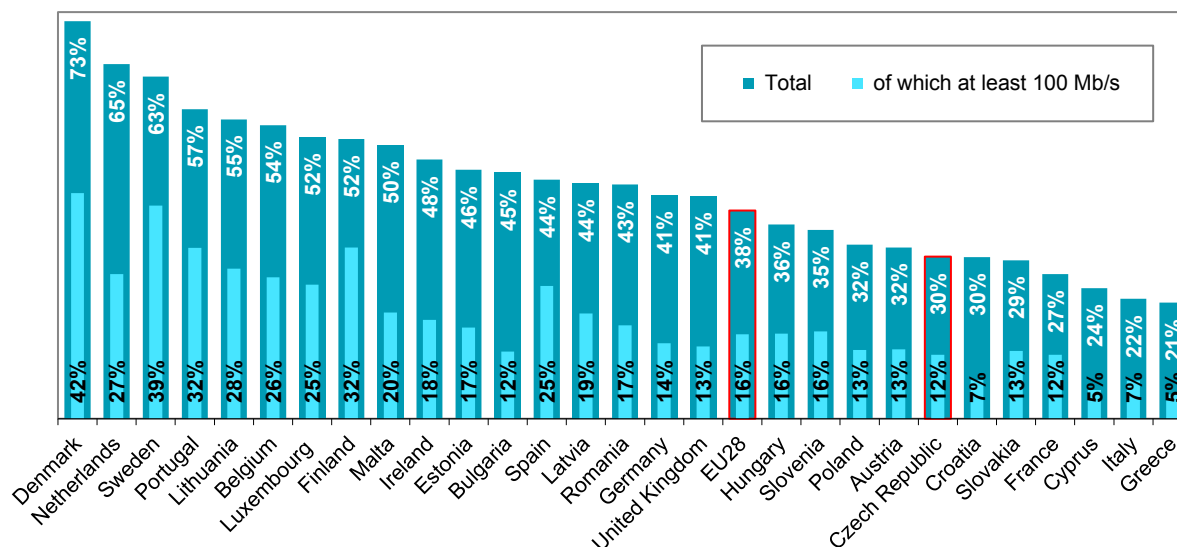
\* as a percentage of all enterprises with 10+ employees in a given size class

Source: Czech Statistical Office 2018, ICT use survey in enterprises

Note: maximum contracted download speed of the fastest fixed internet speed

- On the European scale of enterprises, with internet connection speed of at least 30 Mb/s, Czech enterprises took the place below **the EU28 average** in 2017, i.e. only on the 22nd place, along with enterprises from Slovakia and Croatia.
- During the last four years, the share of enterprises using a very fast internet connection (**at least 100 Mb/s**) has doubled. In 2017, internet connection enabling the aforementioned speed of data download was used by an average of 16% of enterprises within the EU28; in 2013 there were not even 8%.
- The fastest internet connection was available to enterprises in Nordic EU states: Denmark, Sweden, and Finland, where at the beginning of 2017 more than 30% of enterprises stated to be using the maximum download speed of even 100 Mb/s and higher. Opposed to this, in Croatia, Italy, Cyprus, and Greece there were less than 10%.

Figure D7 Enterprises in EU countries with internet connection speed at least 30 Mb/s; 2017 (%)\*



\* as a percentage of all enterprises with 10+ employees in a given country

Source: Eurostat 2018

### D.3 Enterprises with a website

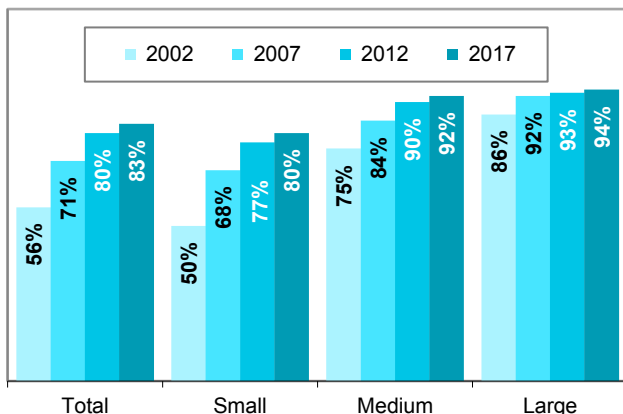
Through the internet, economic entities may make their presentation very efficient and increase the awareness of their existence – they may establish a good reputation – but also communicate with their customers or suppliers. Possibly the most famous environment for self-promotion of an enterprise, on the internet, is its website. Enterprises represent, not only themselves and their products online, but in many cases, they also sell these products via their own website.

- In January 2017, a total of 83% of enterprises in the Czech Republic with 10+ employees had a **website**<sup>5</sup>. Compared to the year 2000, when a website was owned by 40% of enterprises, it is more than twice as many. However, there have not been any significant changes to this share in recent years. In January 2017, a web presentation was most frequently owned by entities operating in the accommodation industry (CZ NACE I (55)), in tourism (CZ NACE N (79)), and in the category CZ NACE J *Information and communication activities* (over 95%).
- In January 2017, approximately two fifths of enterprises had their website **customized for mobile devices**. The number of enterprises with their website customized for mobile devices has increased in recent years, on a year-on-year basis by 10%. In some areas (for instance, accommodation, travel agencies and offices, in the sector of media or IT industry), the share of enterprises providing their website customized for mobiles was more than 65%.

<sup>5</sup> **Enterprises with websites** shall mean enterprises using the web pages, which content they may affect themselves for the purposes of official presentation and offering of products and/or services. These also include web pages shared with other legal person. These do not include information on the enterprise solely on information servers (in so-called catalogues of companies).

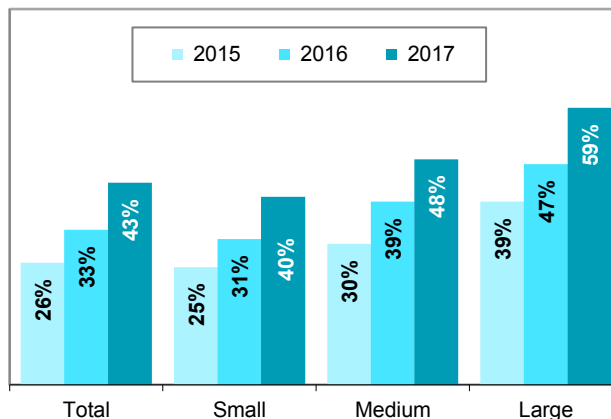


Figure D8 Enterprises in the Czech Republic with a website (%)\*



Source: Czech Statistical Office 2018, ICT use survey in enterprises

Figure D9 Enterprises in the Czech Republic with a website customized for mobiles (%)\*

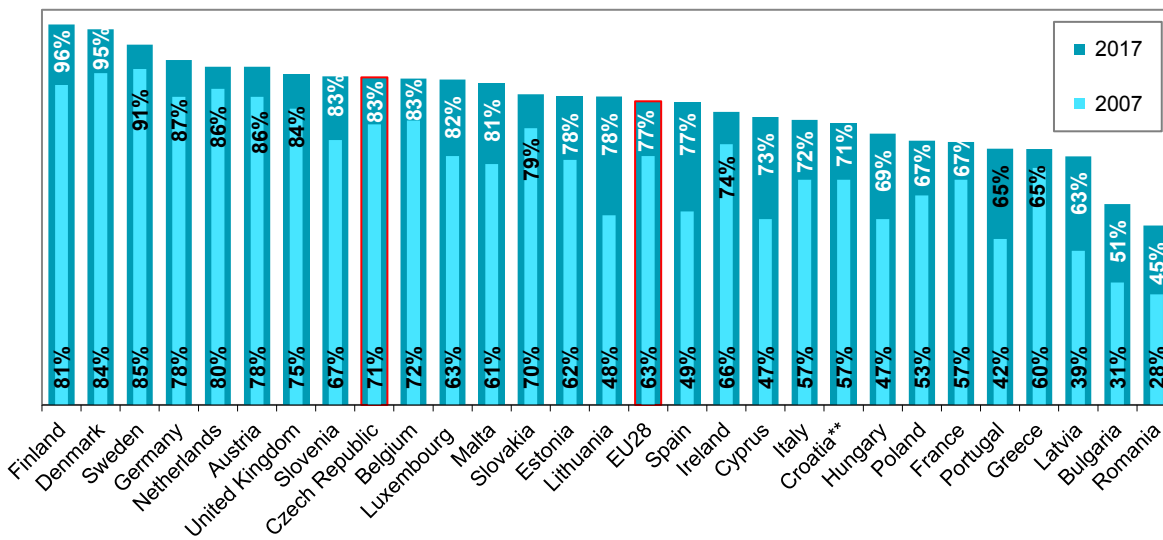


Source: Czech Statistical Office 2018, ICT use survey in enterprises

\* as a percentage of all enterprises with 10+ employees in a given size class

- On a long-term basis, the number of enterprises operating in the Czech Republic with their own website has been one of the highest in **EU countries**. In 2017, their share was higher than the EU28 average (83%) by 6%, therefore, as the indicator shows, the Czech Republic was ninth. As well as in a variety of other indicators, from the digitalisation area of the business sector, the dominating countries are Scandinavian states, where over nine out of ten enterprises have their own website. Opposed to this, for instance, in Bulgaria or Romania, there is still approximately a half of enterprises with 10+ employees, which do not have their own website.

Figure D10 Enterprises in EU countries with a website (%)\*



\* as a percentage of all enterprises with 10+ employees in a given country

\*\* data for year 2009

Source: Eurostat 2018

### Language version and type of domain used by enterprises on their website

- In 2016, more than a third of enterprises (35%) in the Czech Republic had the information on their website also available in a foreign language. With respect to **websites** of enterprises available in a **foreign language**, there are significant differences between the individual fields of business. The crucial point is whether their products or services are also offered abroad. For instance, in January 2016, there were more than 80% of large enterprises in the accommodation or media sectors, which had their websites in a foreign language.



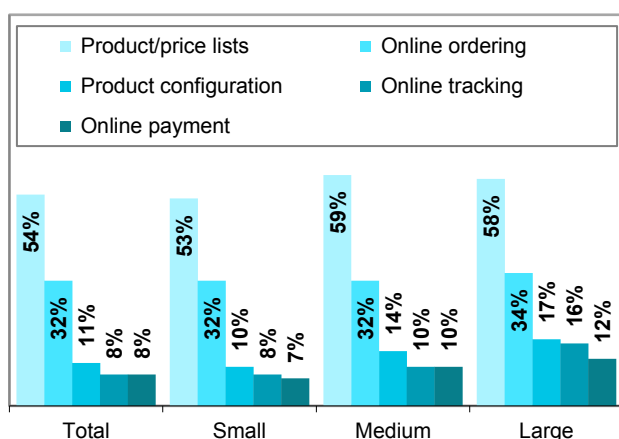
- In 2016, Czech **national domain .cz** was registered for websites of more than three quarters of all enterprises with 10+ employees operating in the Czech Republic. Another nation's domain (e.g. .sk or .de) or a multinational domain (e.g. .eu) was used for the website of 20% of enterprises in the same year. A generic domain (e.g. .com), or another domain, was used by 16% of entities. The use of other domains, than the Czech national domains, is more typical of websites of large enterprises, and with respect to sectors, it is more typical of enterprises involved in IT or of travel agencies or offices.

## Applications available on enterprises' website

In 2017, more than two thirds (68%) of individuals in the Czech Republic claimed to be using the internet for seeking product information (goods and services), and a half of them claimed to have purchased some goods or services over the internet in the same year – for more details see Chapter C. Enterprises have logical reactions to such a demand, and not only do they provide product information on their website, but it is more and more common that they provide a whole range of other customer functions, as well.

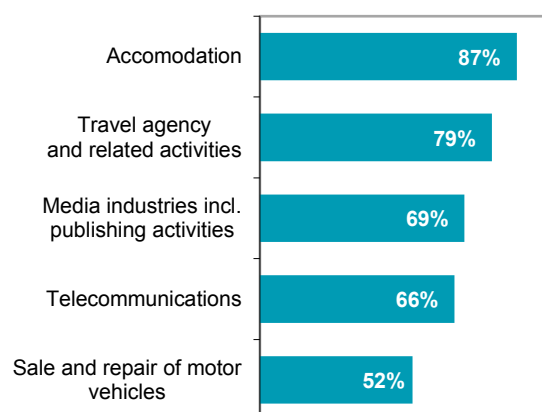
- In January 2017, more than a half (54%) of enterprises in the Czech Republic enabled the visitors to their websites to view their **catalogues or product price lists**, and just under a third (32%) of them offered the option to **order or make reservation** of offered goods or services. A pleasing factor is that, on the international scale, both of the aforementioned functions of Czech companies' websites, stand above the European average. For instance, the aforementioned share of Czech enterprises, enabling their visitors to make an online order or reservation, in comparison with European countries, lead to the Czech Republic being in third place, along with Denmark, and behind enterprises from Sweden and the Netherlands.
- In January 2017, one of the less commonly used **functionalities** of enterprises' websites was the option to **configure the offered product**, in order to accommodate specific demands. 11% of Czech enterprises enabled their customers to do so. 8% of enterprises provided **online tracking** of dealt-with orders on their website, and 7.5% of enterprises provided the possibility of **online payment** for purchased products off the internet.
- The number of enterprises which publish their products and price lists on their website is, as expected, the highest in the area of accommodation and food and beverage services. The TOP 5 industries with the highest share of enterprises with websites enabling to realise online orders or reservations in January 2017 included the aforementioned accommodation industry and travel agencies and offices, and enterprises operating in the audio-visual sector, telecommunications, or in business.

Figure D11 Enterprises in the Czech Republic with selected websites facilities; 2017 (%)\*



Source: Czech Statistical Office 2018, ICT use survey in enterprises

Figure D12 TOP 5 industries with the highest share of enterprises in the Czech Republic with a website enabling online ordering; 2017 (%)\*



Source: Czech Statistical Office 2018, ICT use survey in enterprises

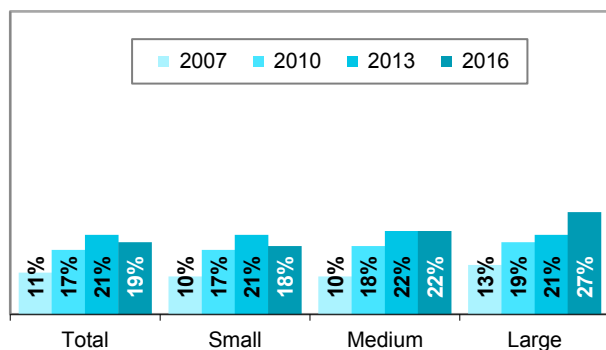
\* as a percentage of all enterprises with 10+ employees in a given size class, resp. industry



## Enterprises selling via their websites

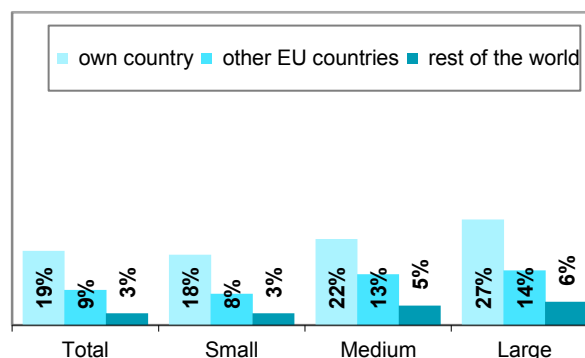
- Not only is the presentation and communication of enterprises realised online, there is also a year-by-year increase in those which **sell their goods or services online**. In 2016, a fifth of Czech enterprises with 10+ employees were selling online. Despite the fact that this number had nearly doubled in comparison with the year 2007, the highest increase of enterprises selling online was recorded between the years 2007–2012. Since then, the number of enterprises selling their products or services online has not changed significantly.
- With regards to enterprises with 10+ employees, the turnover from sales conducted via website amounted to 9% of total enterprise turnover in 2016. For more than 12% of Czech enterprises, the **sales via website comprised over a tenth of their total turnover**. It is the **fourth highest share in the EU**. For more details on the e-sales of enterprises, either via website or via EDI messages, including the significance of e-sales compared to the total turnover, see Part D9 called Electronic sales of enterprises.
- Enterprises selling their products (goods and services) via website, most frequently operate in the industry of **travel agency and related activities as well as accommodation** – in 2016, the share of enterprises of these two industries selling via websites was 63% and 60%, respectively. With respect to travel agencies and offices, these e-sales via websites formed over two fifths (42%) of their total turnover; for enterprises operating in the field of accommodation this share was lower (23%), however, still above the average.
- Enterprises selling online **almost exclusively sell via their own websites**. Sales via a so called **e-commerce market place**<sup>6</sup> have not been commonly used in the Czech business environment – except for enterprises operating in the industry of accommodation, travel agency, and related activities. In 2016, this way of sales was used by less than 3% of enterprises with 10+ employees. Companies performing sales via their own website sell approximately the same number of goods and services to their end customers (so called B2C sales), as well as to organisations of public administration (so called B2B or B2G sales).
- In 2016, half of enterprises in the Czech Republic, using their websites for sales, sold their products or services to customers of **other EU countries**, and 16% of them to **non-EU countries**.

Figure D13 Enterprises in the Czech Republic selling via a website or applications (%)\*



Source: Czech Statistical Office 2018, ICT use survey in enterprises

Figure D14 Enterprises in the Czech Republic selling via a website by customers' locations; 2016 (%)\*



Source: Czech Statistical Office 2018, ICT use survey in enterprises

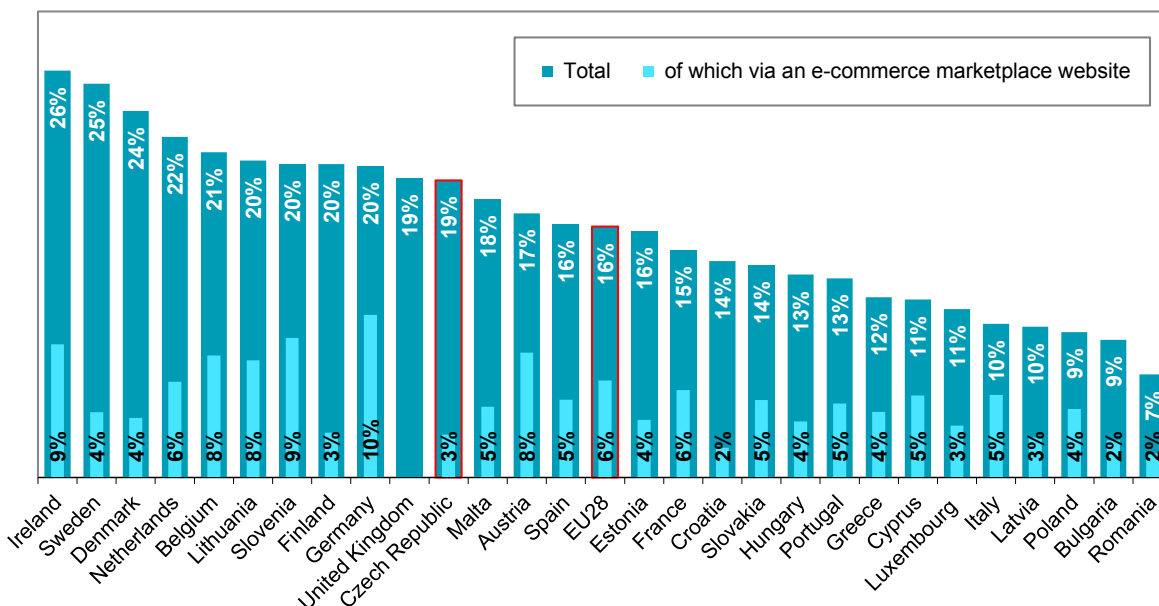
\* as a percentage of all enterprises with 10+ employees in a given size class

<sup>6</sup> The term 'e-commerce marketplace' refers to websites or apps used by several enterprises for trading products (e.g. Booking, eBay, Amazon, Amazon Business, Alibaba, Rakuten, etc.). E-commerce marketplaces are trading platforms with the necessary trading functionalities (a marketplace does not sell or buy goods or services for itself) and is open to several buyers and sellers. The following should not be considered as e-commerce marketplaces: a) a website of an enterprise, selling the enterprise's own products; b) a website of one seller acting as distributor, selling other enterprises' specific products; c) a website that provides e-commerce solutions; d) a website that focuses on non-trading activities like collaborative design.



- In international comparison of enterprises performing sales via websites, Czech enterprises were in 11<sup>th</sup> place in 2016, **above the EU28 average**. In the same year, the highest share of enterprises selling via website – approx. 25% – was in Ireland, Denmark or Sweden, and the lowest one – less than 10% – in Poland, Bulgaria, and Romania.

Figure D15 Enterprises in EU countries selling via a website; 2016 (%)\*



\* as a percentage of all enterprises with 10+ employees in a given country

Source: Eurostat 2018

## D.4 Use of selected internet applications and services by enterprises

As most companies in the Czech Republic now have broadband internet and their own website, there is a considerable basis for advanced and large scale ICT applications. There are differences between companies in the use of advanced applications, and these differences will probably remain in the near future. This chapter describes a number of ICT applications used by companies in the Czech Republic. The use of these applications differs, sometimes significantly, between large and small businesses, but also between sectors of industry. The decision on whether or not to invest in technology or an ICT application will always be based on business considerations, and the cost-benefit analysis will not work out the same for all companies.

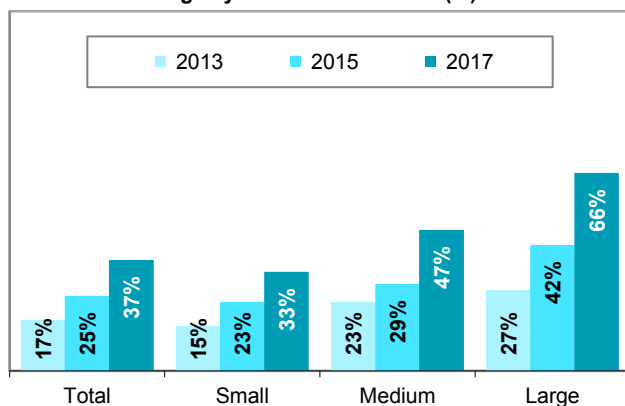
### Enterprises and social media

A website is not the only channel used by enterprises to present themselves on the internet. The usage of social media is currently experiencing its boom. In January 2017, the most common type of social media, used by enterprises, were social networks, where already a third of entities in the Czech Republic had established their own account. Thanks to social networks, enterprises have the opportunity to improve communication with their customers, as well as other advantages. The main benefit of an enterprise's presentation and promotion, on social networks, is building relationships with its supporters, providing support, and relevant information. This way, enterprises may obtain feedback concerning their products or services by a relatively comfortable and interactive method.



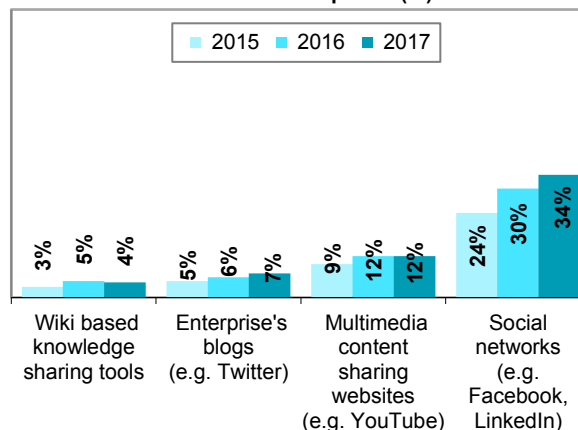
- At least one type of **social media**<sup>7</sup> was used by more than a third (37%) of enterprises in the Czech Republic in January 2017, mostly by the large ones (66%). We have been monitoring the usage of social media since 2013. Since then, the share of enterprises with their own user profile or account, with any social media, has more than doubled – in January 2013 – social media was actively used by 17% of enterprises.
- The most significantly used types of social media in the Czech Republic, in January 2017, were **social networks** (Facebook, LinkedIn, etc.), where 34% of all enterprises had their own account. In the last four years, the share of enterprises with a social network profile in the Czech Republic has more than doubled. The highest increase has been recorded among large entities with 250+ employees, where a user profile was owned by 62% of enterprises, compared to 25% of them in 2013. It applies to all types of social media that they are more frequently actively used by large enterprises rather than small ones.

Figure D16 Enterprises in the Czech Republic using any online social media (%)\*



Source: Czech Statistical Office 2018, ICT use survey in enterprises

Figure D17 Types of social media used by enterprises in the Czech Republic (%)\*



Source: Czech Statistical Office 2018, ICT use survey in enterprises

\* as a percentage of all enterprises with 10+ employees in a given size class

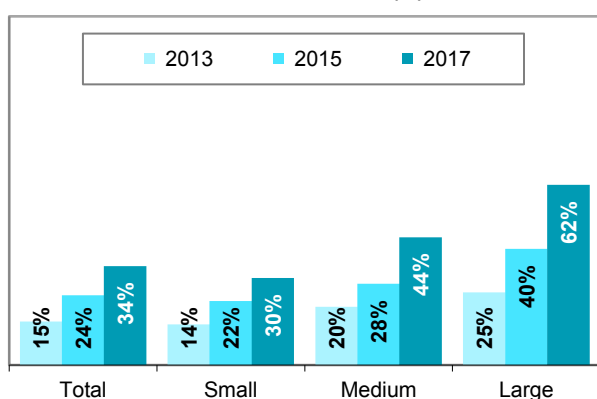
- In January 2017, social networks in the Czech Republic were most frequently used by **travel agencies and offices** (84%), or enterprises operating in the **field of accommodation provision, or in the media sector** – in both of these cases, a social network profile was owned by 79% of enterprises with 10+ employees. Active usage of social networks is often recorded by enterprises, whose main economic activity is related to the provision of ICT activities (62%), or the provision of food and beverage services (52%). With respect to the manufacturing industry, enterprises with a social network profile mainly include those operating in food industry, as well as the automotive industry. Opposed to this, the lowest share was recorded in enterprises involved in the metallurgical or chemical industry.
- Apart from social networks, enterprises have also been using other types of social media, but much less frequently. For instance, enterprises may post contributions to their websites designated to the sharing of **multimedia content**, out of which probably the most well-known is the YouTube portal, enabling enterprises to share their video presentations or various manuals. By means of user commentaries of individual contributions, enterprises may monitor their own reputation, or the reputation of their products or services, they may improve them, react to them or target their advertising campaigns more precisely. Czech enterprises, however, rarely use this type of social media (12% in January 2017). They are popular with enterprises operating in the media sector (52%), and with travel agencies or offices (36%).
- The usage of **enterprise's blogs**, e.g. Twitter, was five times lower in the Czech Republic compared to the usage of social networks – in January 2017 a blog or Twitter account was solely owned by 6.7% of enterprises. Once again, blogs are most frequently used by enterprises operating in the media sector

<sup>7</sup> **Enterprises using social media** shall mean enterprises that have used their profile, account, or licence of social media. The main social media communication platforms and tools are social networks (e.g. Facebook, LinkedIn), blogs or microblogs (e.g. Twitter), multimedia content sharing websites (e.g. YouTube, Instagram, Flickr), or Wiki-based knowledge sharing tools (e.g. Wikipedia).

(activities related to publishing, film-making, video-recording, and TV programmes). As well as in the case of social networks, enterprises may use the blogs to keep in touch with their customers, to increase awareness of their existence, and to build a good reputation.

- The lowest one was the share of enterprises (4.2%) operating their **wiki-based** websites, i.e. websites enabling to quickly edit and update their contents practically to anyone. The most well-known website of this kind, is the internet encyclopaedia, *Wikipedia*. However, wiki may also be used as an enterprise's information system, intranet, knowledge base of specialised communities, or support system of IT product development. This is why they are most frequently used by entities operating in the industry category CZ NACE J (62-63) *Activities specialised in information technologies* (a third in January 2017).
- Enterprises use social networks similarly to their websites. They serve for their self-promotion, and for informing the public of news related to their activities. Nine out of ten enterprises, with a social network profile, use these to **improve their image**, or to **launch their products at the market**. At the same time, they are often used for **customer service**. By means of them, enterprises create space for their customers, enabling them to **ask questions** (used by 61% of enterprises with an active social network profile), or to **cooperate in their improvement** of the goods on offer/services provided (used by 23%). In January 2017, the third most frequently stated reason for the usage of social networks, was **gaining new employees** (used by 57% of enterprises with a social network profile).

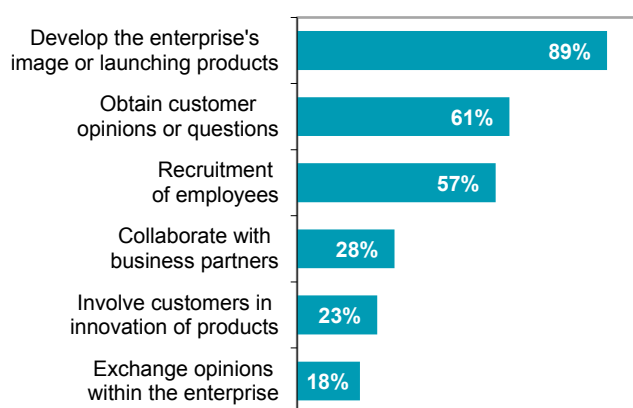
Figure D18 Enterprises in the Czech Republic using online social networks (%)\*



Source: Czech Statistical Office 2018, ICT use survey in enterprises

\* as a percentage of all enterprises with 10+ employees in a given size class

Figure D19 Main reasons for using social networks by enterprises in the Czech Republic; 2017 (%)\*



Czech Statistical Office 2018, ICT use survey in enterprises

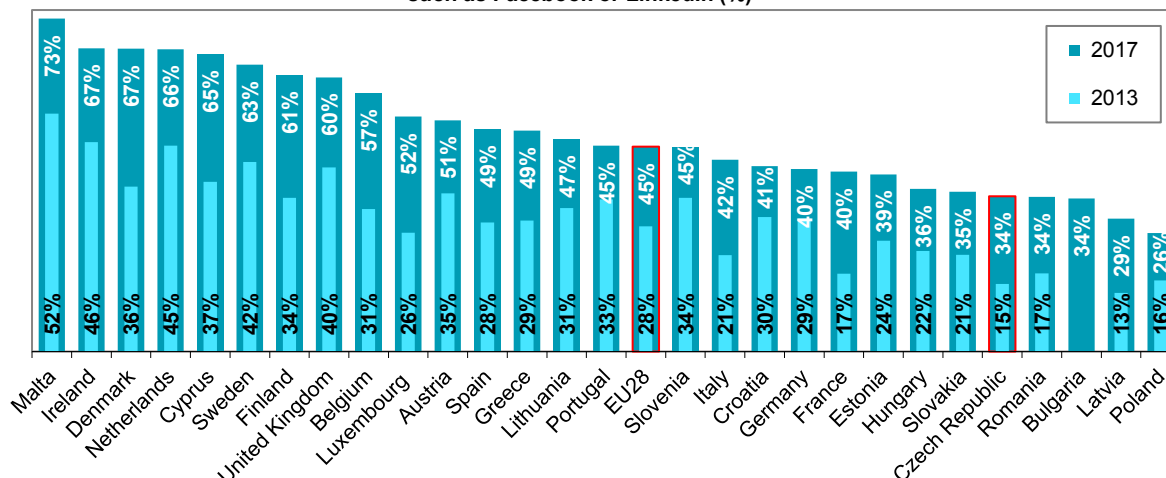
\* as a percentage of all enterprises with 10+ employees using social networks

- In January 2017, a third of all enterprises had a **web presentation as well as a social network profile**; the percentage of such enterprises is increasing slightly year by year. The percentage of large enterprises, which have social network profiles, and operate their websites as well, exceeds 60%. Regarding small and medium-sized enterprises, there is still an overriding trend, that they solely use websites, but not social networks. In 2017, a social network profile was owned solely by a small fraction of enterprises (1%).
- In the same year, on average, nearly a half (48%) of enterprises with 10+ employees in **EU countries**, claimed to be using at least one type of social media – mostly social networks (45%). In January 2017, substantially fewer of them (16%) used websites enabling the multimedia content sharing, and 14% contributed to company blogs. In the same period, only a fraction of all entities (on average, 5% of all enterprises in the EU28) used “wiki-based” online encyclopaedias.
- Since 2013, the number of EU enterprises using social networks increased by 17% from 28% in 2013, to the aforementioned 45% in 2017. **In the Czech Republic, the number in the same period doubled**. Although, since 2013, the number of enterprises actively using social media increased from 15% to 34%, in the year 2017, **we still belong to EU countries with the lowest usage** of this means of communication. A similar situation can be found in Slovakia, Hungary, Romania or Bulgaria.



- In January 2017, the highest share of EU enterprises actively using social networks was recorded in Malta (73%), websites designated for **multimedia content** sharing were most frequently used by enterprises in the Netherlands (29%), and company blogs including Twitter in Great Britain (42%).

Figure D20 Enterprises in EU countries using online social networks such as Facebook or LinkedIn (%)\*



\* as a percentage of all enterprises with 10+ employees in a given country

Note: Enterprises using social media = enterprises that have a user profile on online social networks

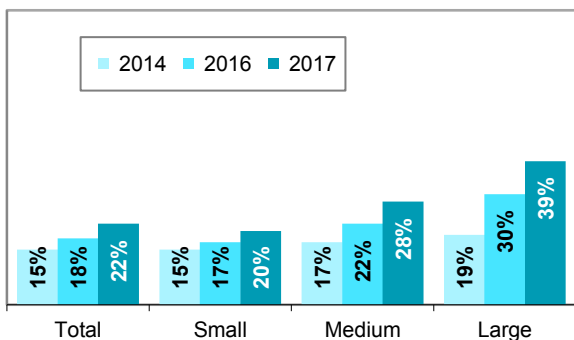
Source: Eurostat 2018

## Enterprises using paid cloud computing services

One of the newest signs of digitalisation, within the business sector, is the usage of paid cloud computing services, where enterprises solely pay for the provided services, programmes or storage space available on the internet, by means of remote access, e.g. by means of a web browser. Enterprises thus do not need to possess, maintain or update the necessary ICT equipment and applications (software), and they usually do not even need to know where the data or software itself is physically located. Services are paid proportionally to their consumption or agreed scope.

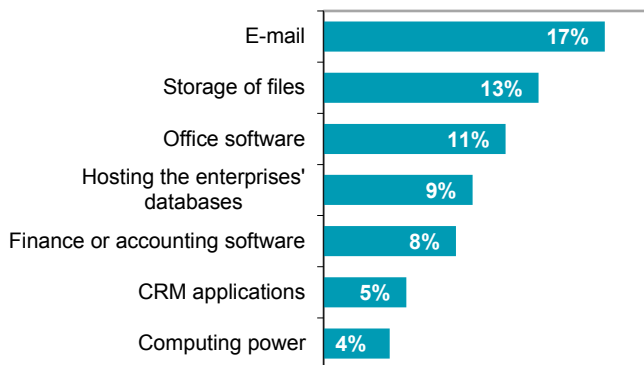
- In January 2017, a type of **paid cloud computing service**, by means of the internet in the Czech Republic, was used by nearly a quarter (22%) of local enterprises – three years ago, in January 2014, there were 15%. Cloud computing services are used by large entities rather than small ones; approximately twice as often, and with respect to sectors, the enterprises involved in ICT activities are more common (56%).
- The most frequently used service, in the Czech Republic, is a paid **cloud email**. In January 2017, this was used by nearly a fifth of enterprises. The second most frequently purchased type of service is **cloud storage of files**, used by 13% of entities. In January 2017, the third place belonged to the usage of **office software**, by means of a cloud (11%).
- The usage of all ascertained cloud computing services is becoming more and more popular every year; the highest year-on-year increase was recorded in January 2017, with cloud data storage and cloud office software.

Figure D21 Enterprises in the Czech Republic using paid cloud computing services (%)\*



Source: Czech Statistical Office 2018, ICT use survey in enterprises

Figure D22 Enterprises in the Czech Republic using selected paid cloud computing services; 2017 (%)\*

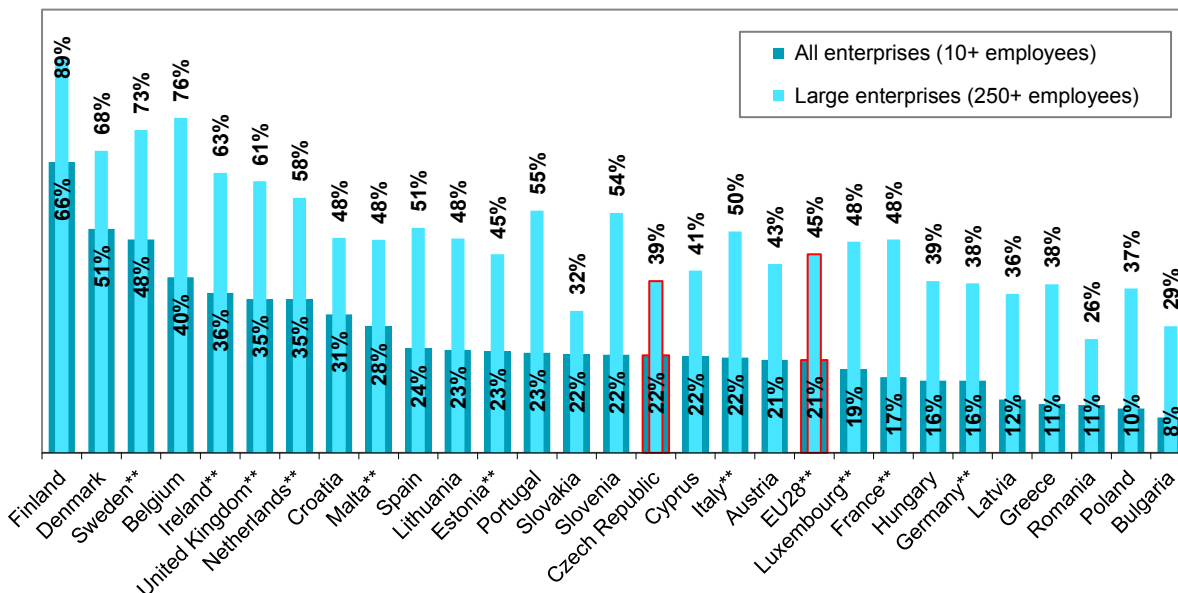


Source: Czech Statistical Office 2018, ICT use survey in enterprises

\* as a percentage of all enterprises with 10+ employees in a given size class

- Paid cloud computing services may either be used on **shared servers** of service providers (so called public cloud), or on servers of providers, which are reserved directly for the given company (**so called private clouds**). A more frequently used option, in the Czech environment, are shared servers, where a type of cloud services was used by 17% of all enterprises in January 2017 (i.e. more than three quarters of entities using cloud computing). With respect to servers reserved exclusively for the given company, 9% of entities use cloud computing services (i.e. 42% of enterprises using cloud). Private cloud is mainly used by large entities with 250+ employees.
- The broader usage of paid cloud services is also visible in other **EU countries**. In 2016, paid cloud computing was used, on average, by over a fifth (21%) of enterprises. The greatest share was recorded in Finland, where in January 2017, it was used by two thirds of enterprises with 10+ employees; in Denmark, it was a half of all enterprises. In comparison with other EU countries, the usage of cloud computing by Czech companies is average.

Figure D23 Enterprises in EU countries using paid cloud computing services; 2017 (%)\*



\* as a percentage of all enterprises in a given size class and country  
 \*\* data for year 2016

Source: Eurostat 2018



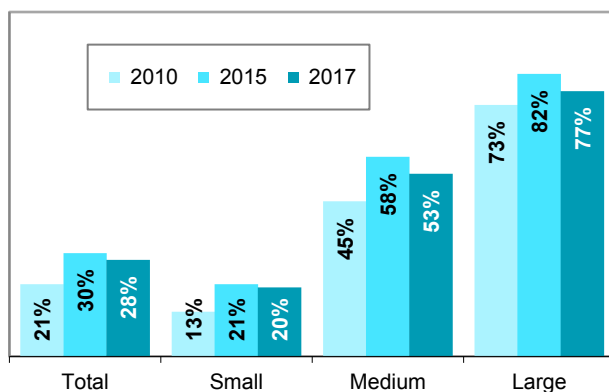
## Enterprises using selected software applications

Company information systems, and software applications supporting administration and financial processes, HR management, production, warehouse management systems, service, and seeking customers or supply chains, serve for more efficient decision-making based on more accurate information and data. There are various kinds of systems, and applications, supported by various technologies. Along with the gradual creation of company ICT infrastructure, launching of economic and operational information systems, and their automated interconnection or integration, enable fast and accurate real-time decision-making. Within the survey, conducted by the Czech Statistical Office, enterprises are questioned about their usage of the following three information systems: ERP, CRM, and SCM.

Also the usage of these software applications differs, sometimes significantly, between large and small businesses, but also between industries. In the manufacturing industry, the use of ICT to support business processes has focused more on the production and distribution chain, while in the services sector it has been used more for marketing and customer services. ERP software is used more in manufacturing and in trade, while CRM software is more common in business services. These differences can be explained quite easily, as they show a rational use of ICT in different companies.

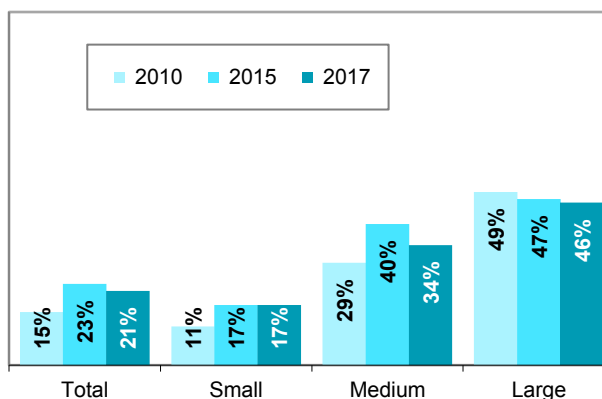
- In 2017, the **ERP system**<sup>8</sup>, designated for information sharing between various production areas, was used by 28% of economic entities with 10+ employees in the Czech Republic. This information system **was more frequently used by large enterprises** rather than small ones (more than 77% of large ones, a fifth of small ones). With respect to sectors, ERP is mainly used by enterprises **active in IT and in wholesale**; opposed to this are the least frequent users found in food and beverage services (6%).
- The **CRM system**, serving primarily for the collection and assessment of **customer information**, was used by 21% of enterprises. The CRM, as well as the ERP system, is **more frequently used by large enterprises** than small ones. The system for administration and usage of customer information in the Czech Republic is much more used by **IT and telecommunication enterprises** (more than a half of them), as well as by enterprises active in media sector (46% in 2017).

Figure D24 Enterprises in the Czech Republic using an ERP software application (%)\*



Source: Czech Statistical Office 2018, ICT use survey in enterprises

Figure D25 Enterprises in the Czech Republic using a CRM software application (%)\*



Source: Czech Statistical Office 2018, ICT use survey in enterprises

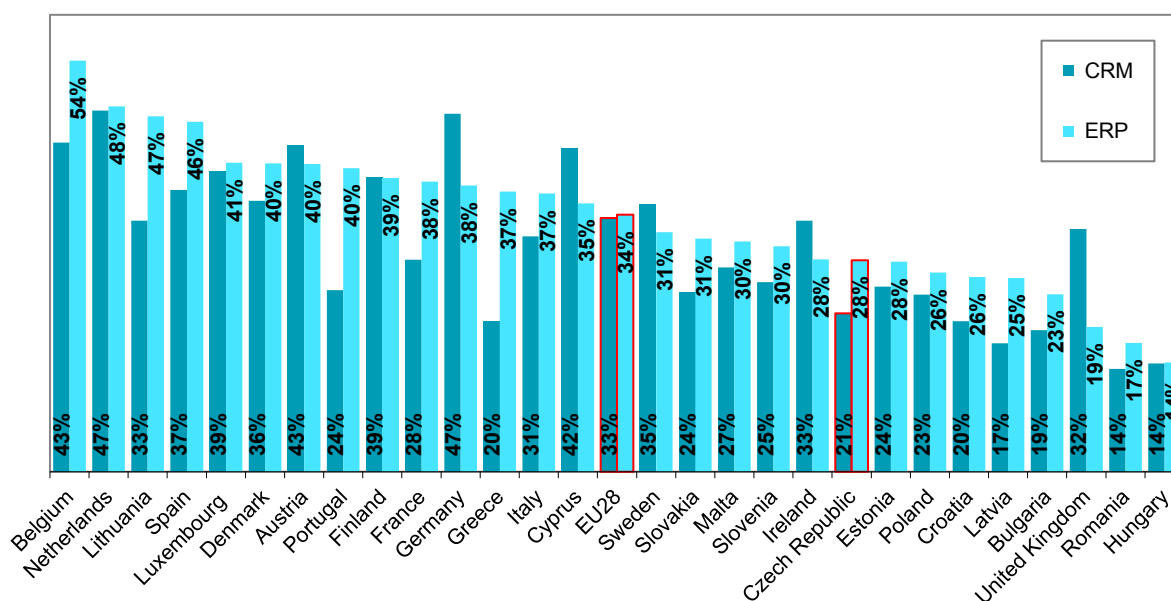
\* as a percentage of all enterprises with 10+ employees in a given size class

<sup>8</sup> **Enterprise Resource Planning (ERP)** is business process management software that allows an organization to use a system of integrated applications to manage the business and automate many back office functions related to technology, services and human resources. ERP consists of one or more sets of software applications that integrate information and processes across the several business functions within an enterprise. ERP software can be customised software, custom built for or built within the enterprise, but there is also package software designed to perform this function. However, this ERP package software is usually built as a modular way allowing enterprises to customise it for their specific economic activity or size, by implementing only some of the modules.



- In January 2017, nearly a fifth (18%) of enterprises in the Czech Republic stated that they were using the CRM system in order **to gain, store, and access customer information** for other functional areas of their enterprises. 16% of enterprises used this system in the same period **to analyse customer data**, e.g. in order to set a price policy and discounts, or in order to set a suitable means of communication and promotion for a given customer group.
- In January 2017, there were still nearly 70% of Czech enterprises which had neither used the ERP nor the CRM system. Neither of these information systems is used by small entities, or enterprises providing food and beverage services (more than 90% of those). They are also hardly used in the construction sector, in transport and storage, retail trade, accommodation, real estate activities or administrative, and support activities. The reason for this may be the fact that these systems are very expensive to purchase.
- With respect to using the aforementioned information systems, the Czech Republic finds itself below the EU average. In January 2017, ERP, as well as CRM, were used approximately by a third of enterprises with 10+ employees in the EU. In comparison – in 2010, each of these systems was used by approximately a fifth of enterprises.
- The ERP system is most frequently used in Belgium, while the highest usage of CRM is found in Germany. The least frequent usage of both systems is recorded in Hungary and Romania.
- In the Czech Republic, as well as in other EU countries, it applies that these information systems are mostly spread among large enterprises. In January 2017, the ERP system was used approximately by three quarters of large enterprises operating in the Czech Republic (77%), and a very similar average share is found within large entities in the EU28 (76%).

Figure D26 Enterprises in EU countries using ERP and CRM software application; 2017 (%)\*



\* as a percentage of all enterprises with 10+ employees in a given country

Source: Eurostat 2018

- The **SCM**<sup>9</sup> application, or the information system, was only used by a fraction of Czech enterprises (2.4%) at the beginning of 2017. Once again, the supply chain management system is most frequently used by large entities (9% in January 2017). With respect to sectors, it was most frequently used by enterprises operating in **trading** (10%), as well as in selected areas of process industry, especially in **the production of cars, computers**, electronic and optic devices, and also for electrical appliances and machines.

<sup>9</sup> **Supply chain management (SCM)** is the software tools or modules used in executing supply chain transactions, managing supplier relationships and controlling associated business processes.



## D.5 Enterprises using electronic invoicing and commerce

A dream of every financial director has always been to have all suppliers whatsoever send him or her completely error-free invoices, in a format suitable for automated processing by information systems, and conclusive for tax offices and auditors. The whole process of incoming invoice processing (receipt => processing => approval => booking) generally has high demands for administration across the whole enterprise. Computerisation and digitalisation are natural trends, and they may often facilitate the performance of obligations, decrease error rate and lower costs.

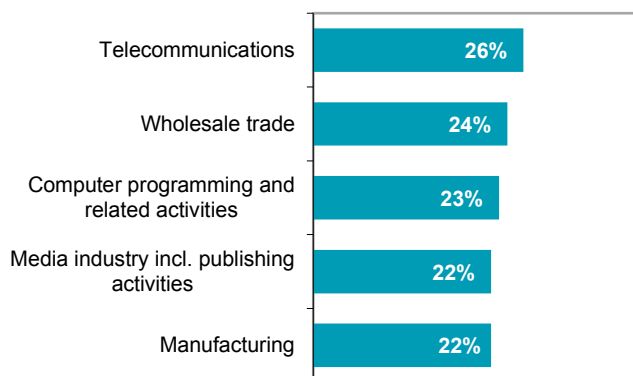
The number of firms carrying out business transactions (placing or receiving orders) over the internet has increased dramatically over the last decade. The Internet has effectively made transactions such as ordering goods and services more efficient and less expensive. At the same time, the internet facilitates new transactions that could not have occurred without its existence (e.g. the use of the internet by SMEs to sell goods globally).

### Use of electronic invoicing by enterprises

In Czech enterprises, a very common issue is still the sending of “electronic invoices” in PDF format, which de facto solely transfers the printing costs from the supplier to the client. A full electronic invoice, within the meaning of computerization and advantages arising therefrom, is solely such an invoice where all data is transferred automatically (by machine), and in a standard structure to the inter-company or accounting system of the counterparty, where it is once again processed electronically.

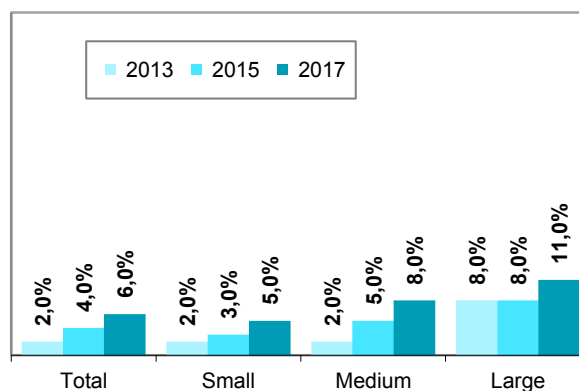
- In January 2017, three quarters of enterprises, with 10+ employees in the Czech Republic, issued and sent **an invoice electronically**<sup>10</sup>. A more common form of electronic invoices issuance is, however, a **structure not suitable for automated processing**, e.g. email attachment as a PDF file – in January this option was used by more than two thirds (69%) of Czech enterprises.
- **Fully automated invoices (so called e-invoices)** were sent by less than a fifth (18%) of enterprises at the beginning of 2017, i.e. approximately **four times less frequently** than the aforementioned electronic invoices not suitable for automated processing (e.g. as a PDF file).

Figure D27 TOP 5 industries in the Czech Republic with the highest share of enterprises sending e-invoices; 2017(%)\*



Source: Czech Statistical Office 2018, ICT use survey in enterprises

Figure D28 Enterprises in the Czech Republic using data boxes for sending invoices (%)\*



Source: Czech Statistical Office 2018, ICT use survey in enterprises

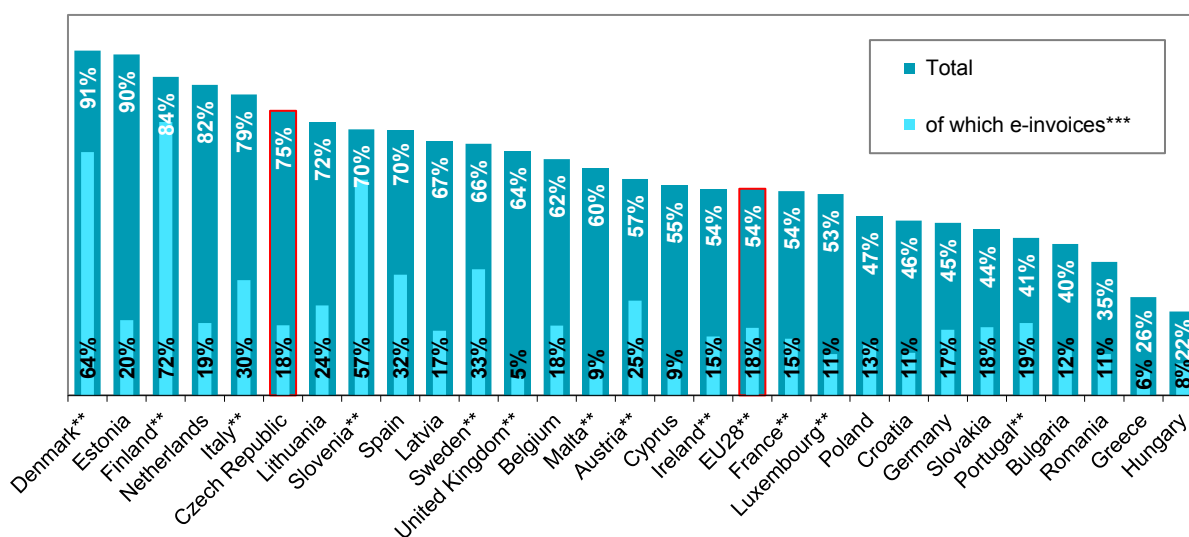
\* as a percentage of all enterprises with 10+ employees in a given industry, resp. size class

<sup>10</sup> The use of **electronic invoicing** shall mean a form of electronic billing. There are two types of these invoices:

- The “true” electronic invoices (e-invoice) processable by automated data processing tools. Issuer of the invoice (seller or service provider) upload the invoice into the recipient (customer) software applications which deal with it. The transmission format may be, for instance, edi, xml, isdoc, idoc, csv, or other formats used by invoicing software producers.
- The electronic invoices in a format that does not enable them to be processed automatically (non-structured invoices). These are, for instance, invoices sent in as a text by means of standard email, or invoices sent in as an email attachment in the pdf format, for example.

- In January 2017, e-invoices were sent more frequently by large enterprises, with 250+ employees; with respect to sectors, these were most commonly issued by entities in the automotive industry, telecommunications, wholesale or in computer programming and related activities (in all these sectors it was more than a fifth).
- Relatively many enterprises operating in the Czech Republic still issue their invoices in a **standard paper structure** – in January 2017, there was nearly a quarter of them (23%). This mostly involves small entities; with respect to the prevailing economic activities, those are entities operating in food and beverage services (36%), and in retail trade (33%).
- In January 2017, only 5.6% of all enterprises used a **Data Box**, in order to send an invoice; this mainly concerned large entities (11%). Nevertheless, in comparison with previous years, the share of Data Boxes used in order to send electronic invoices has been increasing slightly. In 2017, invoices were mainly sent by means of Data Boxes by enterprises operating in telecommunication services (21%).
- In regard to sending invoices electronically, in January 2017, in international comparison, Czech enterprises are highly **above the average (6th place)**. However, should we form the comparison solely out of fully automated e-invoices, in EU28 comparison, such usage by Czech enterprises would be approximately average. Most e-invoices are issued by enterprises in Finland, Denmark, and in Slovenia.

Figure D29 Enterprises in EU countries sending invoices in electronic form; 2017 (%)\*



\* as a percentage of all enterprises with 10+ employees in a given country

\*\* data for year 2016

\*\*\* Invoices in electronic form in a standard structure suitable for automated processing (e.g. EDI, XML, ISDOC) that are exchanged either directly or via service operators or via an electronic banking system.

Source: Eurostat 2018

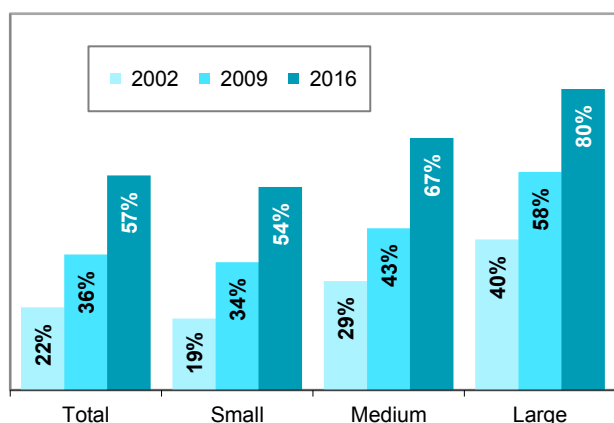


## Enterprises buying online and value of their electronic purchases

On a long-term basis, Czech enterprises have been very successful within the monitored indicators, in the area of e-commerce<sup>11</sup>. Not only is the number of enterprises conducting electronic purchases increasing, but, above all, the value of e-purchases is increasing. It is a fact that for many years, with respect to e-purchases, enterprises prefer purchasing via websites over purchasing via EDI messages. On a long-term basis, despite the fact that enterprises make frequent purchases via website, the value of such purchases is relatively low. Higher amounts of money are spent via EDI messages.

- In 2016, 57% of enterprises in the Czech Republic – twice as many as eight years ago – **placed an electronic order** via the internet, or another computer network.
- Electronic purchases are preferred by large enterprises (in 2016, these were realised by 54% of small enterprises and by 80% of large ones). **With respect to industries**, e-purchases are mostly used by entities providing telecommunication services, where e-orders are placed by over 90% of entities.
- Over the past few years, the **value of Czech enterprises' e-purchasing**, realised via orders placed in computer networks, has been increasing. Whereas in 2010, the share of this e-purchasing reached 25% of their total volume, in 2016, the share was already at 41%.
- On a long-term basis, when purchasing electronically, enterprises prefer purchases **via website** over **EDI messages**<sup>12</sup>. In 2016, more than a half of enterprises (55%) in the Czech Republic claimed to have made purchases via website, as opposed to approximately a fifth of them (21%), that used so called EDI messages.

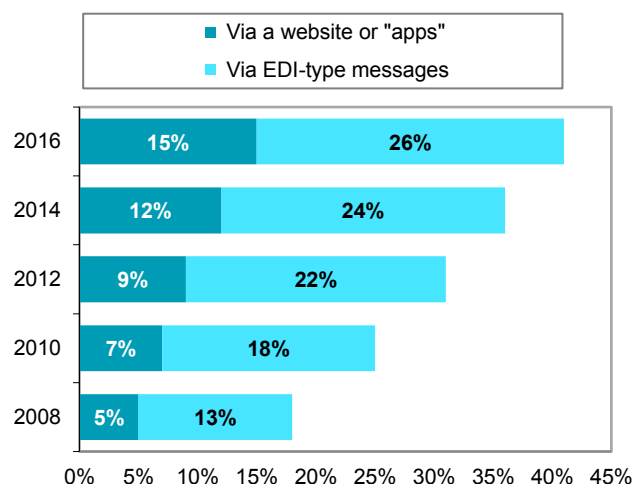
Figure D30 Enterprises in the Czech Republic purchasing over computer networks (%)\*



Source: Czech Statistical Office 2018, ICT use survey in enterprises

\* as a percentage of all enterprises with 10+ employees given size class

Figure D31 Value of enterprises' electronic purchases in the Czech Republic (%)\*



Source: Czech Statistical Office 2018, ICT use survey in enterprises

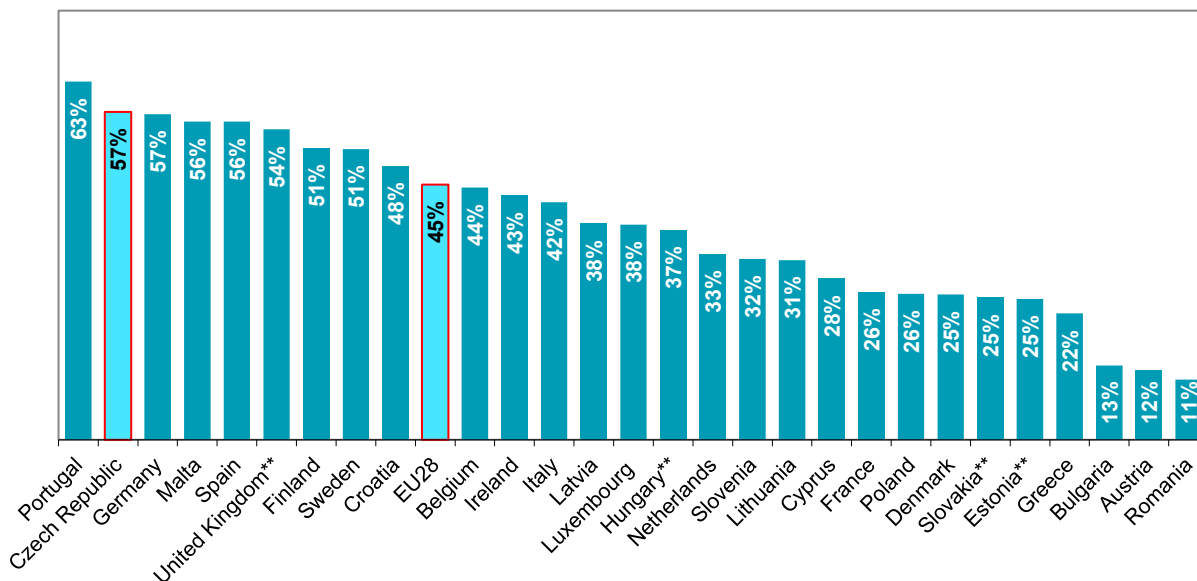
\* as a percentage of total purchases' value of enterprises with in a 10+ employees

<sup>11</sup> **Electronic commerce (e-commerce)** shall mean purchases or sales (placing or accepting orders) is performed by means of the internet or other computer networks through websites or the electronic data interchange (EDI), regardless the method of payment or delivery. Purchases (sales) implemented on the basis of orders prepared from information obtained on the internet but placed in a traditional way (in person, by phone, fax, or written order), or by electronic mail are not included.

<sup>12</sup> **Electronic Data Interchange (EDI)** refers to the structured transmission of data or documents between organizations or enterprises by electronic means. It also refers specifically to a family of standards (EDI-type) and EDI-type messages suitable for automated processing. EDI is an e-business tool for exchanging different kinds of business messages. EDI is here used as a generic term for sending or receiving business information in an agreed format suitable for automated processing (e.g. EDIFACT, XML, etc.) and without the individual message being manually typed.

- Despite the fact that electronic purchasing via websites is much more common for enterprises in the Czech Republic, the **frequency of e-purchases** (i.e. the value share of e-purchases over the total value of enterprises' purchases) realised via EDI messages (26% in 2016), most frequently used for trading between the enterprises within a supply chain, is higher by two thirds, compared to the frequency of enterprises' e-purchases via websites (15% in 2016).
- In 2016, the highest frequency of e-purchases realised **via websites**, was recorded by enterprises active in computer programming and related activities, where these electronic commercial transactions took 41% share in the financial value of their total purchases. With respect to industries, the frequency of e-purchases realised via website, was the highest in enterprises active in the automotive industry (31%), or enterprises involved in the media sector (29%).
- In 2016, the highest **frequency** of e-purchases via EDI messages, in the Czech Republic, within individual industries, was recorded by enterprises specialised in the production and distribution of energy, gas, water or heat (CZ NACE D), where these purchases concerned a half of the financial value of their total purchases. Within the process industry, this frequency was the highest with enterprises involved in computer production, and the production of other electronic appliances and devices, as well as in the automotive industry. Besides the industrial area, the frequency was also high in telecommunication services or in trading.
- The share of enterprises, conducting e-purchasing in the Czech Republic, was the second highest of all **EU countries** in the year 2016. Along with Portugal, Germany, Spain, Malta, Great Britain, Finland, and Sweden, we belong to countries with more than five enterprises out of ten that conducted purchasing via the internet or another computer network. In contrast, in Romania, Bulgaria, and Austria there were less than 15% of enterprises purchasing via the internet or another computer network.

Figure D32 Enterprises in EU countries that purchased (placed orders) over computer networks; 2016 (%)\*



\* as a percentage of all enterprises with 10+ employees in a given country  
 \*\* data for year 2015

Source: Eurostat 2018

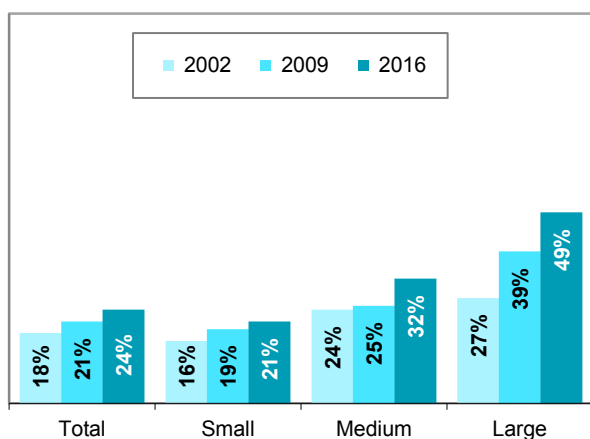


## Enterprises selling online and value of their electronic sales

As mentioned in the previous chapter, the popularity of electronic trading in the Czech Republic is increasing on a year-by-year basis. In 2016, a quarter of enterprises conducted electronic sales, and such sales formed nearly a third of the enterprise's total turnover in that year. In the previous decade, the share of enterprises conducting electronic sales has doubled, and the frequency of electronic sales (% of the enterprise's total turnover) is nearly four times as high. Enterprises conducting sales via the internet, or another computer network, use this method to access foreign markets – a half of enterprises, selling via website in 2016, received an order from non-EU customers (apart from the Czech Republic), and nearly another fifth of them conducted sales outside the EU28 in that year.

- In 2016, nearly a fourth (24%) of enterprises, with 10+ employees in the Czech Republic, claimed to have received at least one electronic order via the internet, or another (private inter-company) computer network, via website or EDI messages, and with respect to any goods or services. In the same year, the turnover from these **electronic sales** formed nearly a third (31%) of the total turnover of enterprises with 10+ employees. Although the share of enterprises selling electronically has almost been at a standstill over the past five years, the turnover share in electronic sales, with respect to the total turnover of enterprises, has been gradually increasing.
- With respect to **size category of enterprises** conducting electronic sales, large enterprises prevail. In 2016, a half of them sold electronically, and more than two fifths of their total turnover (43%) originated precisely from these e-sales.

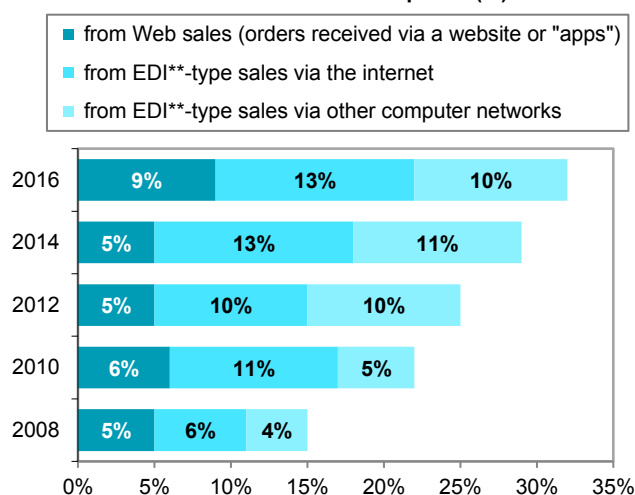
Figure D33 Enterprises in the Czech Republic selling over computer networks (%)\*



Source: Czech Statistical Office 2018, ICT use survey in enterprises

\* as a percentage of all enterprises with 10+ employees in a given size class

Figure D34 Turnover from enterprises' electronic sales in the Czech Republic (%)\*



Source: Czech Statistical Office 2018, ICT use survey in enterprises

\* as a percentage of total enterprises' (10+) turnover

\*\* Electronic transmission of messages suitable for automated processing, i.e. using EDI, XML for business-to-business e-Commerce

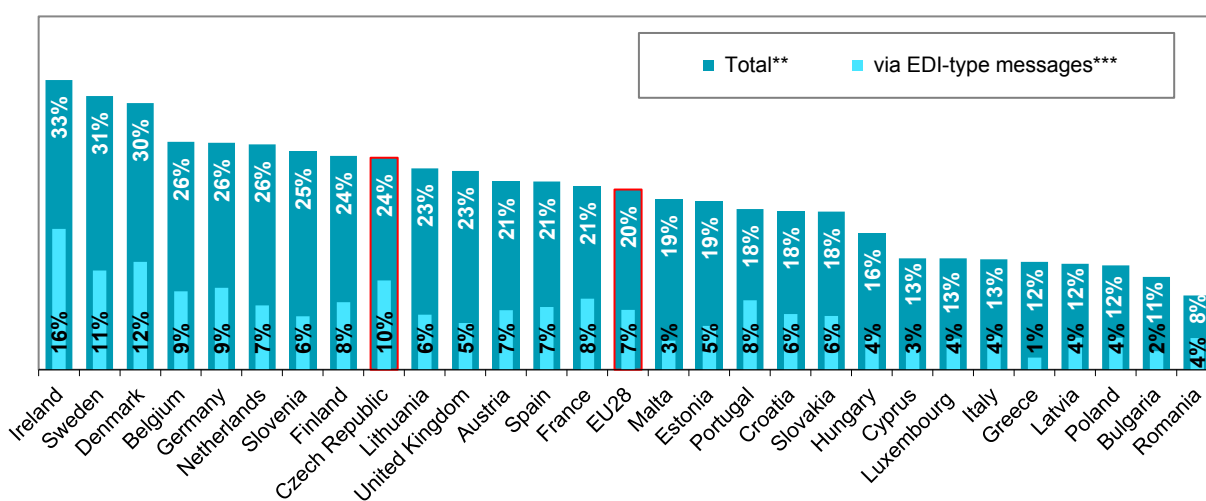
- On a long-term basis, the share of enterprises selling goods or services **via website (web sales)**<sup>13</sup> has been higher, than the one of enterprises selling goods or services **via EDI messages (EDI sales)**. In 2016, approximately a fifth of enterprises in the Czech Republic conducted their sales via website; a tenth of enterprises did so via EDI messages.

<sup>13</sup> **Web sales** are sales made via an online store (web shop), via web forms on a website or extranet, or apps. Web sales are distinguished from EDI sales. In particular, the type of e-Commerce transaction is defined by the method of making the order. This approach should mitigate the interpretation problems where both types, EDI and Web, are used in the process. An example is a situation where an order is made by the customer through a web application but the information is transmitted to the seller as an EDI-type message. Here the type of selling application is however web; EDI is only a business application to transmit information about the sale. Web sales can be done by mobile phones using an internet browser.



- The situation is the opposite when regarding the **turnover percentage** from these e-sales. The turnover from sales conducted via website only amounted to 9% of the total enterprise's turnover in 2016, whereas the turnover reached via EDI messages comprised nearly a quarter (23%) of the total enterprise's turnover, i.e. nearly a threefold of turnover from sales via website.
- E-sales via **EDI messages** are typical, when enterprises conduct business between each other. EDI messages are mainly used by large enterprises. In 2016, 36% of large enterprises sold their goods or services this way, but only 7% for small enterprises.
- From the **sectoral point of view**, the sales conducted via EDI messages are, on a long-term basis, conducted mainly in the process industry, particularly **in the automotive industry**; in 2016, this way was used by nearly 39% of enterprises with 10+ employees, and the turnover from such sales comprised more than 50% of these enterprise's total turnover.
- On the scale of enterprises conducting e-sales, in 2016, the Czech Republic was **in ninth place – above the EU28 average**. The Czech Republic also stands above the average with respect to e-sales conducted via EDI messages (4th place in 2016).

Figure D35 Enterprises in EU countries selling over computer networks; 2016 (%)\*



\* as a percentage of all enterprises with 10+ employees in a given country

\*\* Includes any enterprises that during the reference year received at least one electronic order over the internet or other computer network via a enterprise's website or 'apps' or via an e-commerce marketplace website or 'apps' used by several enterprises for trading products or by using EDI-type message.

\*\*\* Electronic transmission of messages suitable for automated processing, i.e. using EDI or XML standards for business-to-business eCommerce transactions without the individual messages being typed manually.

Source: Eurostat 2018



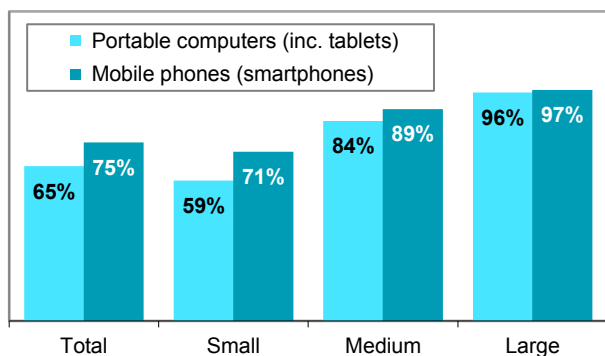
## D.6 Employees and ICT

Despite the fact that nearly all enterprises with 10+ employees (98%) in the Czech Republic use computers, and practically the same share of enterprises has internet access, only less than a half of all employees in such enterprises use a computer. The total low number of employees using a computer at work, compared to other EU countries, is also defined by the structure of our economy, with a strong manufacturing orientation, where the use of ICTs, is not necessary for a large number of employees.

### Employees using selected information technologies

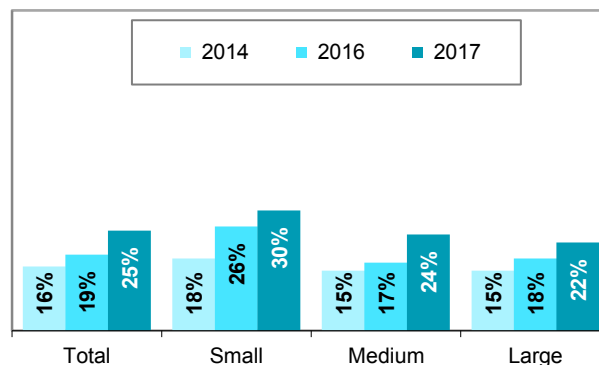
- The percentage of **employees** using a **computer** at work in Czech enterprises has not changed significantly over the past years. Since 2006, the number has been slightly above 40%; in January 2017, it was precisely 49% of employees. The percentage of employees using a computer at work does not differ significantly with respect to size categories of enterprises; differences can rather be found between individual industries. In January 2017, most employees using a computer at work could be found in telecommunication services and IT related activities (identically 95%). In contrast, the lowest percentage was found in food and beverage manufacturing (27%), and in administrative and support activities, where, in January 2017, computers were used for work by 22% of employees.
- The share of employees, having **internet access from their company computer** in the Czech Republic, is increasing slightly on a year-by-year basis; in January 2017, the share exceeded 40% for the first time – in 2010, it was only a third. In contrast to the number of employees using a computer at work, the number of employees using an office PC to access the internet is decreasing, along with the company size. The reason for this might be the restrictions in providing internet access from employees' company computer by their employer, apparently applied more frequently in large enterprises.
- Computers with internet access are more often provided to employees in the media sector, in telecommunication services or IT (above 90%). Computers are least frequently used (similarly to the access to a computer) by employees in food service (24%), and in other administrative and support activities (21%).

**Figure D36 Enterprises in the Czech Republic providing employees with selected devices that allow internet connection; 2017 (%)\***



Source: Czech Statistical Office 2018, ICT use survey in enterprises

**Figure D37 Employees in the Czech Republic using portable devices that allow internet connection for business purposes (%)\***



Source: Czech Statistical Office 2018, ICT use survey in enterprises

\* as percentage of all enterprises with 10+ employees in a given size class

\* as percentage of all employees in enterprises with 10+ employees in a given size class

- In recent years, it is increasingly common that enterprises provide their employees with **portable and mobile devices** for business purposes (laptops, tablets, smart phones), with internet access. In 2017, these were provided by eight enterprises out of ten. In January 2017, these portable devices were **used at work** approximately by a quarter of their employees – more frequently by the employees of small enterprises (30%), and, with respect to sectors, mostly by employees in ICT industries.
- In comparison to other **EU countries**, Czech enterprises report one of the lowest percentages of employees using a computer for their work, or computer with **internet access**. In January 2017, the Czech Republic was the seventh to last in EU comparison. The number of employees using the internet

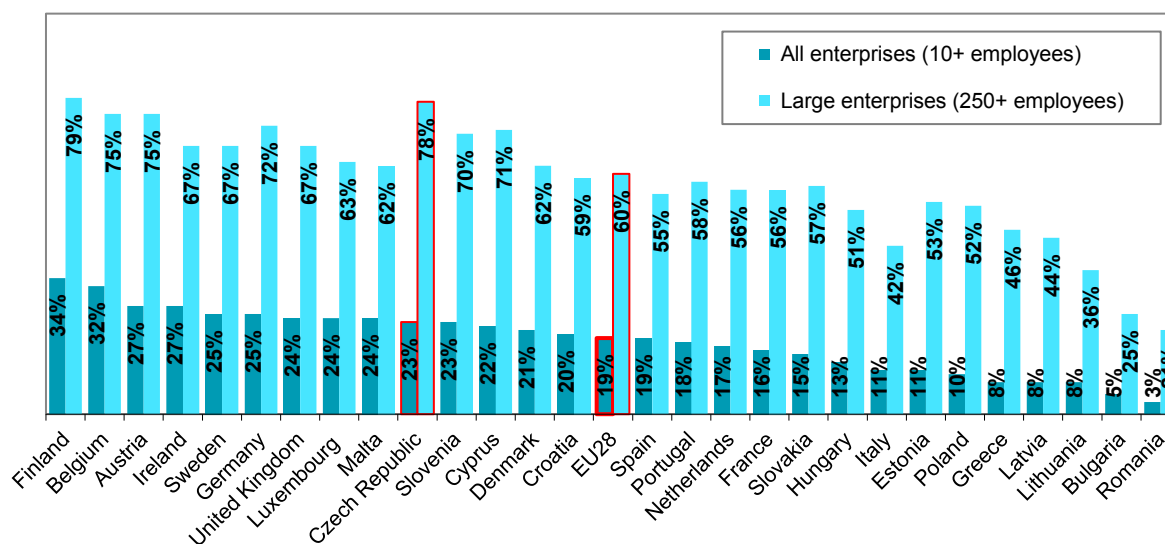
for business purposes is the highest in enterprises of Nordic countries, where, in 2017, the internet was used by seven enterprises out of ten for this purpose.

## ICT training provided to employees

Besides the aforementioned information technologies, enterprises may also provide their employees with training focused on gaining, or improving, their computer skills. In 2016, approximately a quarter of employees of enterprises with 10+ employees in the Czech Republic had the opportunity to undergo such training.

- In 2016, approximately a quarter (23%) of enterprises in the Czech Republic provided their employees with a possibility of **training**, in order to gain or improve their computer skills. The opportunity to undergo such computer training was much more frequently offered to employees of medium-sized enterprises (43%), and particularly of large enterprises (78%); with respect to sectors, this mainly involved the employees involved in IT (76%) and telecommunications (67%).
- From an international point of view, Czech enterprises that provide their employees with training are above the EU28 average. In comparison with large enterprises, providing their employees with training, Czech enterprises with 250+ employees can even be found in first places – along with enterprises from Finland, Belgium, and Austria we belong to countries, where three quarters of large entities provide their employees with computer training.

Figure D38 Enterprises in EU countries providing training for employees to develop their ICT related skills; 2016 (%)\*



\* as a percentage of all enterprises in a given size class and country

Source: Eurostat 2018

## Enterprises employing ICT specialists

The growing digitalisation of the economy requires an increasing number of ICT specialists. In the past 10 years, the percentage of ICT specialists, out of the total number of employees in the Czech Republic, has doubled, however, the number is still insufficient. Out of enterprises employing ICT specialists, 29% of them claimed to have had jobs available in 2016, for which it has been hard to find an ICT specialist(s), with appropriate knowledge and skills. These problems were more frequent within large enterprises, especially the ones from the ICT industries.

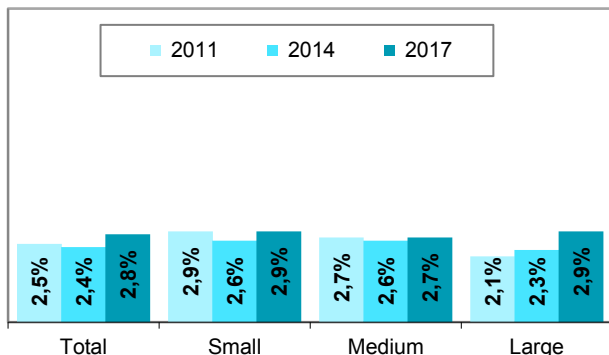
- In January 2017, ICT specialists<sup>14</sup> were employed by a fifth of enterprises. ICT specialists formed 2.8% of all employees in the relevant business sector. It may not come as a surprise that most ICT specialists can be found in the sector CZ NACE J Information and communication activities.

<sup>14</sup> **ICT specialists** are employees for whom ICT is the main job. For example, to develop, operate or maintain ICT systems or applications.



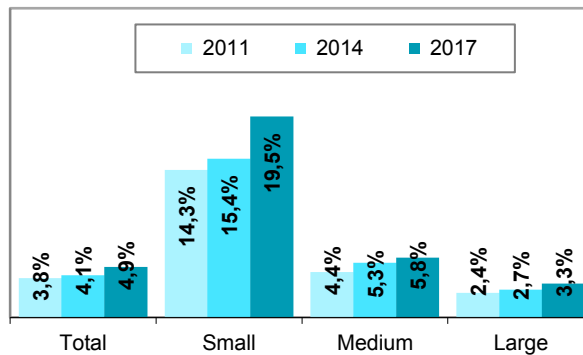
In 2016, a tenth of enterprises (11%) offered their ICT specialists the possibility of **specialised training**. Should we solely consider enterprises employing ICT specialists, specialised training was provided to over a half of them (53%), particularly by large enterprises (74%); with respect to sectors, they were mainly enterprises involved in telecommunications and IT-related activities.

**Figure D39 ICT specialists in all enterprises in the Czech Republic (%)\***



Source: Czech Statistical Office 2018, ICT use survey in enterprises

**Figure D40 ICT specialists in enterprises with ICT specialists in the Czech Republic (%)\***



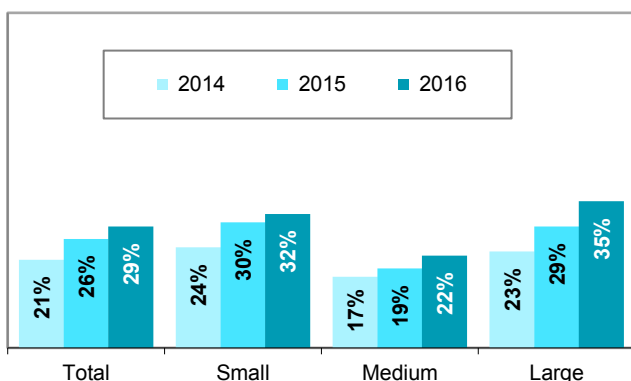
Source: Czech Statistical Office 2018, ICT use survey in enterprises

\* as percentage of all employees in all in a given size class

\* as percentage of all employees in enterprises with ICT specialists in a given size class

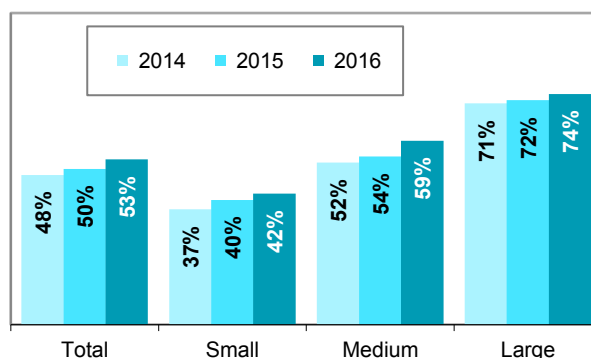
- In 2016, **new ICT specialists** were recruited by 7% of enterprises with 10+ employees. These were mainly enterprises involved in the ICT sector (66%). The lowest number of newly recruited ICT specialists was found within enterprises in the food and beverage services (1%). With respect to enterprises already employing ICT specialists, new ICT specialists were recruited by a third of them; the least frequently by construction companies.
- In 2016, finding ICT specialists with an appropriate qualification was difficult for 6% of enterprises (or 29% of enterprises already employing ICT specialists). Difficulties with finding suitable ICT specialists are more frequently claimed by large enterprises with 250+ employees (28%, or 35% of large enterprises already employing ICT specialists). With respect to sectors, this issue was more frequently raised by entities involved in IT or telecommunication services.
- In 2016, less than 5% of enterprises recruited new ICT specialists, and claimed to have had other available jobs, for which it was difficult to find suitable employees, with the relevant skills.

**Figure D41 Enterprises in the Czech Republic having vacancies for ICT specialists that were difficult to fill (%)\***



Source: Czech Statistical Office 2018, ICT use survey in enterprises

**Figure D42 Enterprises in the Czech Republic providing training for ICT specialists to develop their ICT related skills (%)\***



Source: Czech Statistical Office 2018, ICT use survey in enterprises

\* as percentage of all enterprises with 10+ employees employing ICT specialists in a given size class