

## Enterprises making slow progress in adopting ICT for e-business integration

### ICT usage in enterprises 2012

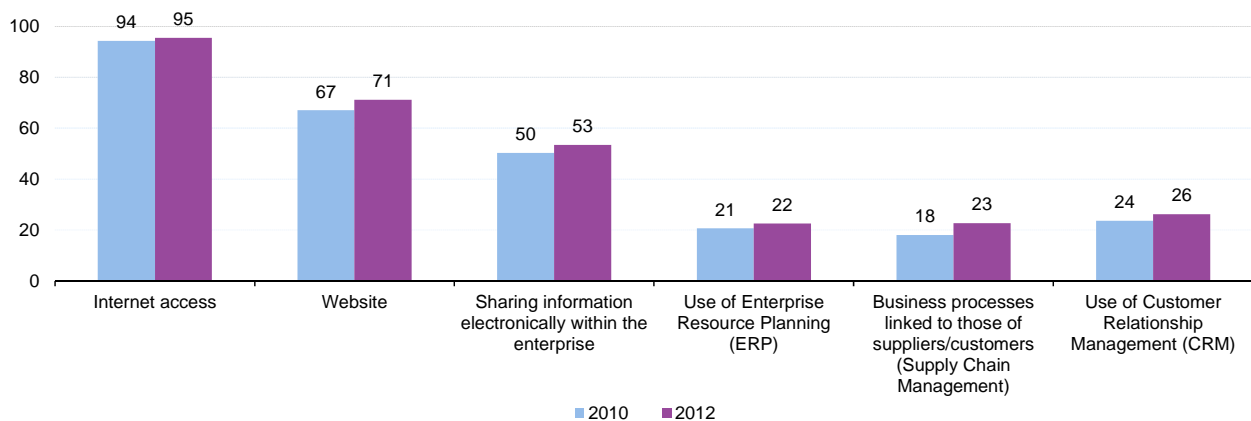
**Information and Communication Technologies (ICT) have fast become an integral part of EU enterprises. The extensive and intensive use of ICT, combined with new ways of accessing and using the Internet efficiently, characterise what we refer to as the electronic economy (e-economy).**

These driving forces are decisive for the way that enterprises run their business, organise internal

communication, share information with business partners and communicate with customers. In this context, **e-economy** includes both electronic business (**e-business**) and electronic commerce (**e-commerce**).

The former refers to the use of ICT in business processes and is the subject of this publication, while the latter refers to commercial transactions for either goods or services.

**Figure 1: Adoption of e-business technologies in enterprises, EU27, 2010 and 2012 (% of enterprises)**



Source: Eurostat (online data codes: [isoc\\_ci\\_in\\_en2](#), [isoc\\_ci\\_it\\_en2](#), [isoc\\_bde15dip](#))

### Adoption of e-business: highlights

- The percentage of EU enterprises with **Internet access** seems to have reached saturation level in 2012 (95 %).
- The percentage of EU enterprises having a **website** (71 %) can be expected to grow.
- The gap between small and large enterprises is reportedly bigger for those using more **advanced ICT applications** than for those with a website. The percentage of enterprises with a **website** ranged from 68 % for small enterprises to 93 %

for large enterprises, but from 18 % to 68 % respectively for those using **Enterprise Resource Planning (ERP)**.

- Enterprises in the accommodation sector reported using **Customer Relationship Management (CRM)** for marketing as much as for operational purposes (33 % for both).
- Some 40 % of EU enterprises that recruited or tried to recruit **ICT specialists** in 2011 reported having difficulties in filling vacancies.

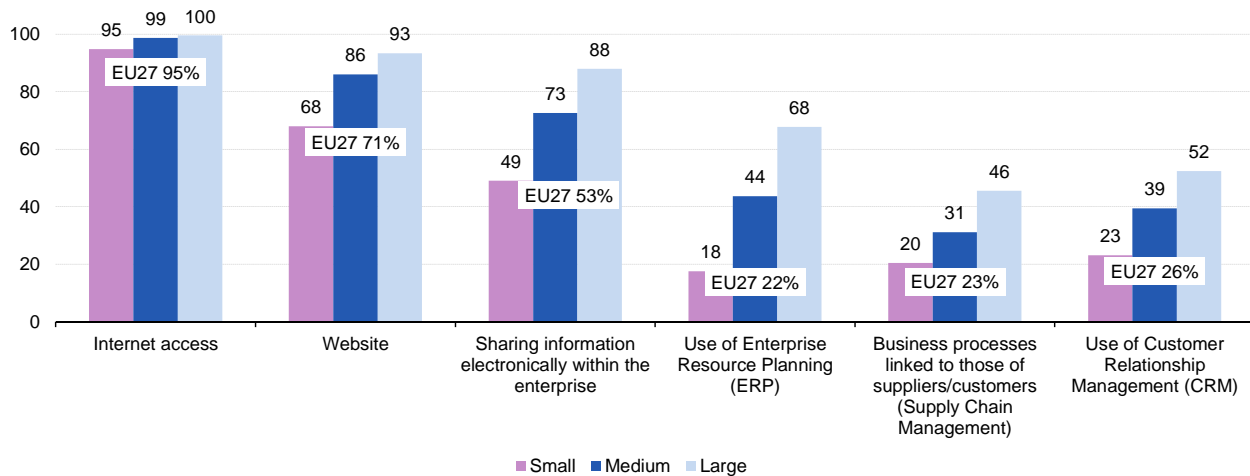
**Table 1: Enterprises adopting technologies for e-business, 2010 and 2012  
(% of enterprises)**

	Internet access		Website		Sharing information electronically within the enterprise		Use of Enterprise Resource Planning (ERP)		Business processes linked to those of suppliers/customers (Supply Chain Management)		Use of Customer Relationship Management (CRM)	
	2010	2012	2010	2012	2010	2012	2010	2012	2010	2012	2010	2012
<b>EU27</b>	<b>94</b>	<b>95</b>	<b>67</b>	<b>71</b>	<b>50</b>	<b>53</b>	<b>21</b>	<b>22</b>	<b>18</b>	<b>23</b>	<b>24</b>	<b>26</b>
BE	97	97	78	76	70	64	40	33	34	32	43	38
BG	85	87	37	43	39	48	11	20	18	31	12	16
CZ	95	97	74	80	49	56	21	24	15	15	15	19
DK	97	99	88	89	60	63	29	33	17	21	24	28
DE	97	97	81	82	58	53	29	24	26	23	42	39
EE	96	96	70	75	48	48	7	10	11	15	10	11
IE	92	94	68	74	63	62	20	19	13	17	24	28
EL	90	91	58	64	59	:	36	:	21	25	18	:
ES	97	96	62	68	61	59	22	22	17	21	28	28
FR	97	99	58	64	50	57	24	33	13	13	19	26
IT	94	96	61	65	52	61	22	21	22	23	21	25
CY	88	95	52	60	55	60	17	21	8	16	23	24
LV	91	91	48	53	48	55	8	10	34	43	12	14
LT	96	100	65	71	31	41	11	23	34	37	14	16
LU	96	98	70	77	55	53	21	23	27	31	25	24
HU	90	89	57	62	33	38	8	9	11	11	9	10
MT	94	95	66	73	58	60	18	24	23	20	20	21
NL	98	100	81	84	55	57	22	26	5	15	19	29
AT	97	98	80	82	67	70	25	26	14	22	41	41
PL	96	93	65	68	30	32	11	13	17	25	16	17
PT	94	95	52	52	60	62	26	31	40	51	19	23
RO	79	79	35	36	39	39	19	20	13	14	18	17
SI	97	98	73	77	51	58	21	28	19	24	15	23
SK	98	98	74	76	59	58	17	20	27	39	26	20
FI	100	100	87	91	62	62	28	33	20	27	34	34
SE	96	98	89	89	61	63	35	38	27	31	36	36
UK	91	94	76	81	32	44	6	9	7	26	13	17
IS	98	99	77	84	50	56	10	14	7	14	20	19
NO	97	97	78	79	72	72	19	20	25	33	35	32
HR	95	96	61	65	51	58	15	19	53	47	17	20
MK	84	88	43	48	38	47	9	13	:	33	13	16
TR	91	:	53	:	48	:	15	:	16	:	31	:

Figures on Supply Chain Management (SCM) refer to business processes linked to those of either suppliers or customers

Source: Eurostat (online data codes: [isoc\\_ci\\_in\\_en2](#), [isoc\\_ci\\_it\\_en2](#), [isoc\\_bde15dip](#))

**Figure 2: Enterprises adopting technologies for e-business, by size class, EU27, 2012  
(% of enterprises)**

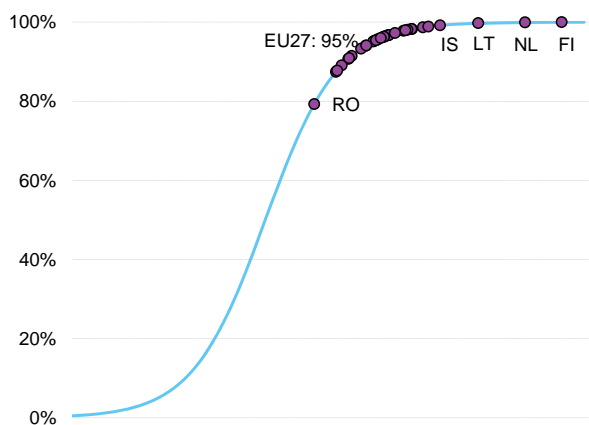


Source: Eurostat (online data codes: [isoc\\_ci\\_in\\_en2](#), [isoc\\_ci\\_it\\_en2](#), [isoc\\_bde15dip](#))

## Internet access reached saturation level while use of websites is still growing

Access to the Internet is the cornerstone for e-business because of its limitless capacities for connecting persons and enterprises worldwide.

**Figure 3: Enterprises with Internet access, 2012 (% of enterprises)**



Source: Eurostat (online data code: [isoc\\_ci\\_in\\_en2](#))

The percentage of EU enterprises that used computers and had Internet access seems to have reached saturation level. In 2012, 95 % of enterprises had access to the Internet, a marginal increase (+1 pp) compared with 2010. The share of enterprises that had Internet access was similar in most countries. In 19 out of 27 EU countries, 95 % or more of enterprises reported having Internet access.

The adoption of ICT can be represented by an S-shaped curve of cumulated adopters. Cumulative adoption rates (% enterprises) progress slowly at first, then start accelerating and finally slow down and stabilise as they approach saturation point.

In this article, S-shaped figures are used for illustration purposes and refer to a theoretical course of evolution. In the theoretical adoption model represented by the S-shaped curves, the time dimension is not included, indicating that the respective countries may progress at different speeds. As shown in Figure 3, the cumulative rates of enterprises with Internet access undergo a period of rapid acceleration, then deceleration and finally

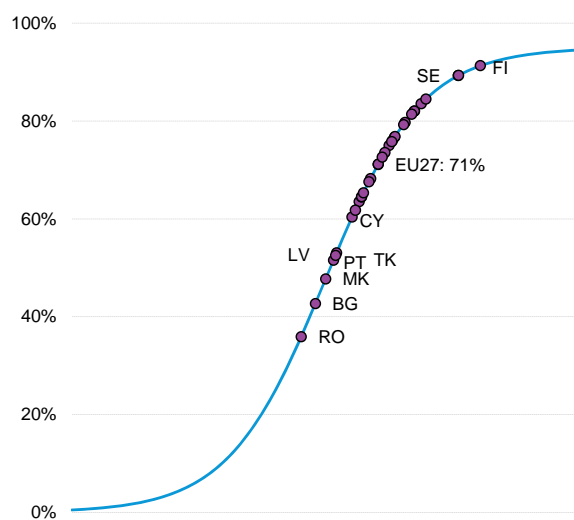
saturation, already reported to be at 100 % in certain countries.

Concerning staff employed in enterprises with 10 or more employees, 53 % used computers, and 45 % used computers with access to the Internet. For both, a small increase was reported compared with 2010, +1 pp and +2 pp respectively.

Additionally, enterprises consider it important to be visible on the Internet. Consequently, enterprises' websites increasingly offer various functionalities, such as online ordering, product catalogues and information, order tracking, customisation of products, links to social media etc. Importantly, the use of a website involves a more active role than just having an Internet connection. Some 71 % of enterprises reported having a website. An increase can be observed compared with 2010 (+4 pp).

Figure 4 shows that although almost all countries appear to be in the progressing phase of having a website, the cumulative adoption rates grow at a slower pace as they approach a theoretical saturation point.

**Figure 4: Enterprises with a website, 2012, (% of enterprises)**



Source: Eurostat (online data code: [isoc\\_ci\\_it\\_en2](#))

**Table 2: Persons using computers and accessing the Internet, by enterprise size class, EU27, 2010 and 2012 (% of persons employed)**

	All enterprises		Small		Medium		Large	
	2010	2012	2010	2012	2010	2012	2010	2012
Persons employed using computers	52	53	44	47	50	52	57	58
Persons employed using computers with access to the Internet	43	45	39	42	43	45	45	48

Source: Eurostat (online data code: [isoc\\_bde15b\\_p](#))

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## One in five enterprises uses Enterprise Resource Planning software applications

Enterprises' **internal e-business integration** refers to sharing information electronically and automatically between different business functions within an enterprise as opposed to **external integration**, in which other business partners are involved. Internal integration potentially streamlines and boosts the efficiency of an enterprise.

Integration is implemented in various forms. One of them is data-linking between various software applications, using a common database. The use of a single modular software application, **Enterprise Resource Planning** (ERP), is another commonly-used alternative.

ERP software applications aim to facilitate the flow of information and the potential to integrate internal and external management information across several functions of an enterprise. A characteristic of ERP is that it is delivered in 'modules' that typically integrate processes relevant to planning, purchases, marketing, sales, customer relationship, finance and human resources.

The percentage of EU enterprises that used ERP software applications reached 22 % in 2012, with a marginal increase (+1 pp) compared with 2010. Some progress can be expected in the adoption of ERP, particularly among small enterprises (18 %).

In most countries, enterprises reported increases in the use of ERP. However, there may be differences in the understanding of ERP as the 'enterprise-wide information management system', due to various country-specific implementations and customisation of ERP packages. Consequently, respondents were asked to report explicitly on whether they shared information, electronically and automatically, between specific **front-office** business functions such as sales and purchases (contacts with customers and suppliers), and the four important **back-office** business functions:

- management of inventory levels,
- accounting,
- production or services management,
- management of the distribution of goods.

In a wider context of **e-business integration**, one out of two enterprises (53 %) shared information, related to sales or purchases, between any business function. This included the use of ERP or other software applications as for example for managing information about their customers. Compared with 2010 a small increase (+ 3 pp) was observed.

### Sharing information on sales orders

When an enterprise receives an order for selling goods or for providing services, either electronically (e.g. placed over a website) or by other conventional means, the information is passed on to other business functions for further processing, in principle, to the accounts department.

Some 24 % of enterprises in the EU shared information on orders electronically and automatically with the management of inventory levels, particularly in the wholesale and retail trade. Furthermore, 33 % of enterprises shared that information with the accounts department, particularly in the information and communication, distributive trade and manufacturing sectors.

Some 24 % of enterprises shared information on orders with the production or services management and 21 % of enterprises with the distribution management. The former refers to aligning orders for goods or services with production or provision, while the latter refers to making products available to final consumers or other enterprises.

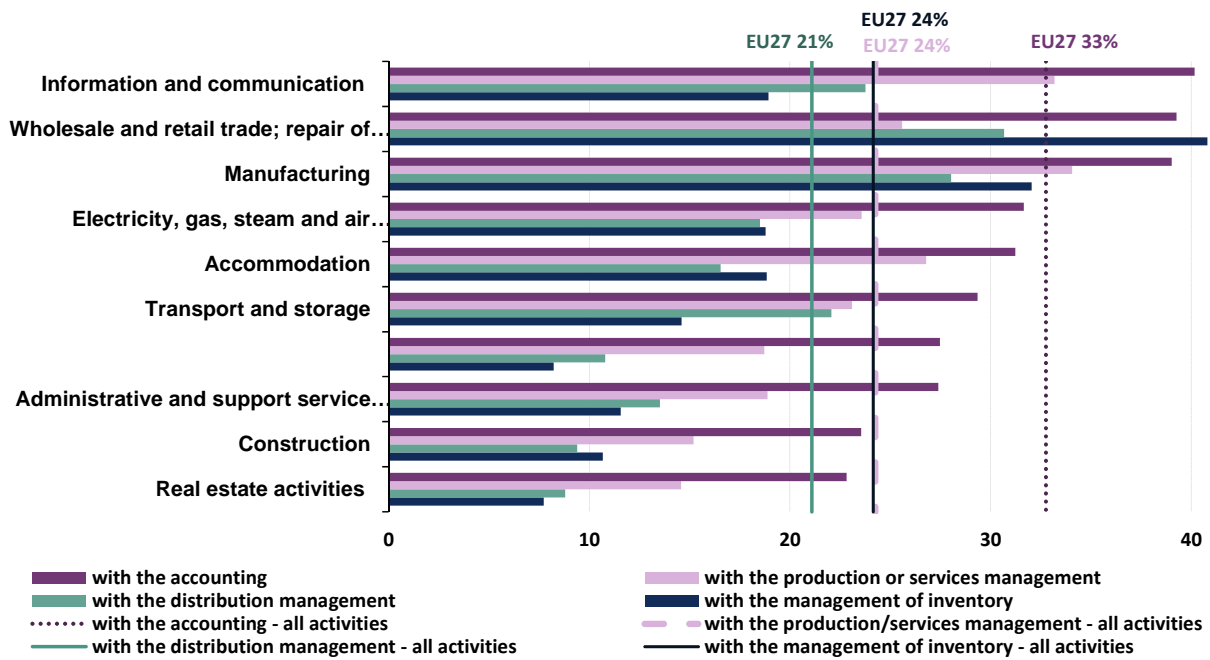
### Sharing information on purchase orders

Regarding purchase orders for goods or services, 24 % of enterprises in the EU responded that they shared information on these with the management of inventory electronically and automatically, particularly in the manufacturing and distributive trade sectors.

Some 29 % of enterprises reported sharing the relevant information with the accounts department.

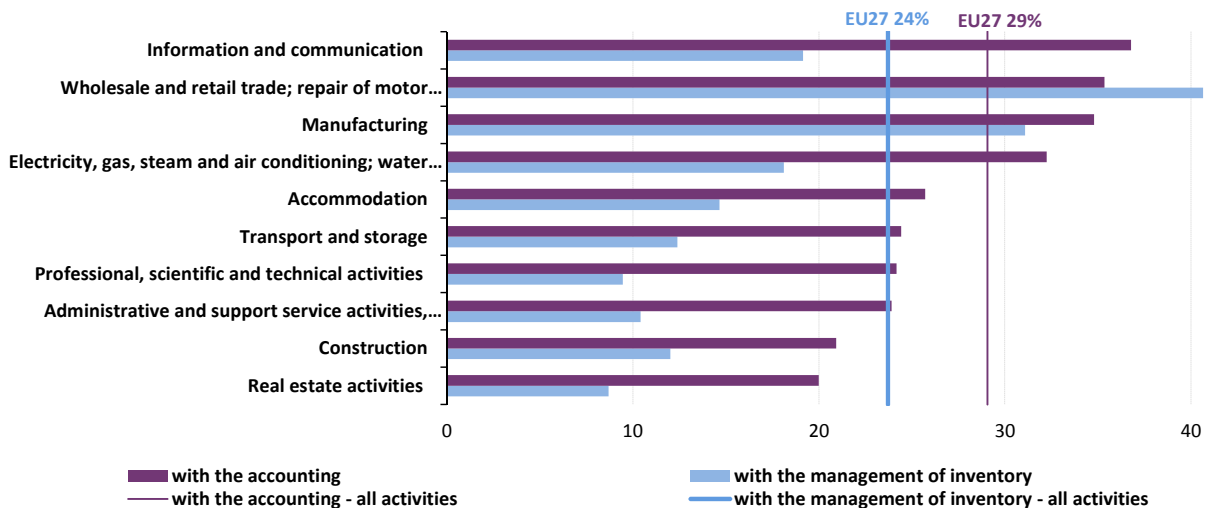
For enterprises in all economic sectors, sharing information with the enterprise's accounts department prevailed, except in the wholesale and retail trade, for which information on purchase orders is in principle passed on to the department responsible for management of the inventory.

**Figure 5: Enterprises sharing information on sales with other business functions, by economic activity, EU27, 2012 (% of enterprises)**



Source: Eurostat (online data code: [isoc\\_bde15dip](#))

**Figure 6: Enterprises sharing information on purchases with other business functions, by economic activity, EU27, 2012 (% of enterprises)**



Source: Eurostat (online data code: [isoc\\_bde15dip](#))

## Sharing Supply Chain Management information strongly depends on economic sector

Supply Chain Management (SCM) includes all activities concerning the exchange of information between an enterprise and its suppliers and customers. This information may concern, for example, inventory levels, production plans, demand and supply forecasts or progress of deliveries.

Accordingly, the use of SCM software applications aims to coordinate effectively the availability and delivery of products to final consumers, in the right quantity, at the right time, into the right hands at optimal cost.

SCM actively involves all resources — business functions — concerned with planning and forecasting, purchasing, product assembly, logistics, sales and customer service.

Depending on the industry served, SCM and ERP software applications may overlap to a certain extent. However, the former tends to focus on financial information and material flows along the

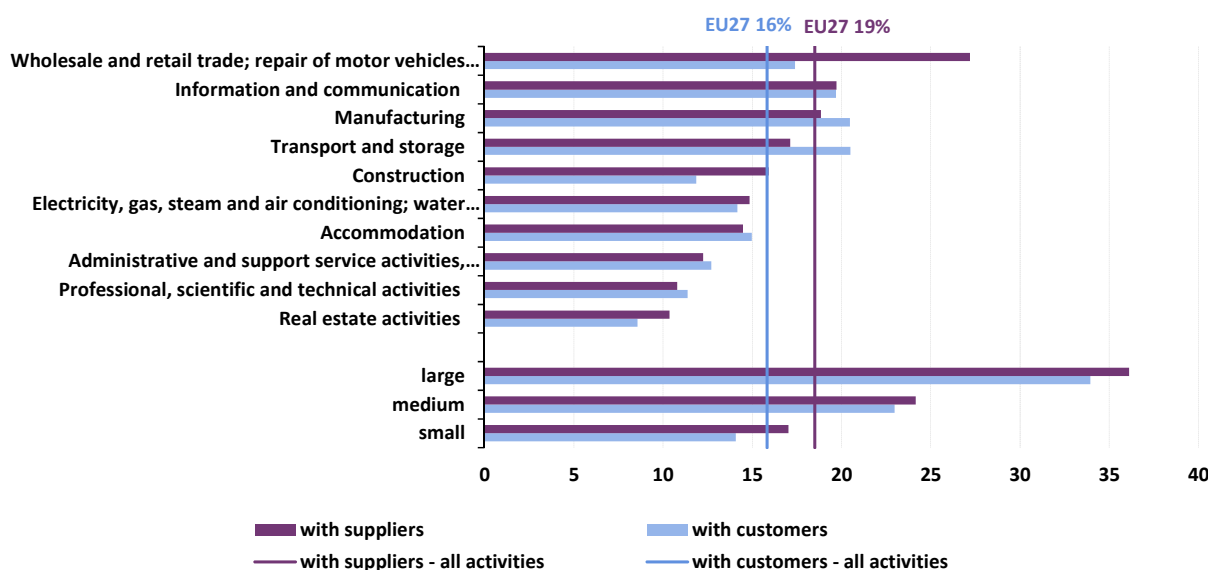
complete value chain of suppliers, manufacturers, service providers, distributors and customers.

The extent to which SCM information is shared varies among economic sectors. On the one hand, some 27 % of enterprises in the distributive trade — the highest among enterprises in all economic sectors — shared SCM information with their **suppliers**.

On the other hand, the highest percentage of enterprises that shared SCM information with their **customers** was reported in transport and storage (21 %), manufacturing (20 %), and information and communication (20 %).

Overall, in 2012, 19 % of enterprises in the EU shared SCM information electronically with their **suppliers**, an increase of 6 pp compared with 2010. Some 16 % of enterprises shared information on SCM with their **customers**, an increase of 5 pp compared with 2010.

**Figure 7: Enterprises sharing information on supply chain management, by economic activity, EU27, 2012 (% of enterprises)**



Source: Eurostat (online data code: [isoc\\_bde15dip](#))

## One in four enterprises uses operational Customer Relationship Management

Enterprises streamline their marketing efforts and target their customers to maximise business potential. For this specific purpose, they use software applications for managing information about their customers, Customer Relationship Management (CRM) applications.

It is believed that the adoption of CRM improves marketing and sales performance by improving customer service and customer relationships. Improvements come, for instance, from providing user-friendly mechanisms for receiving complaints, identifying potential problems before they occur, in general, by facilitating communication with the customer and by anticipating customer preferences. These technology-enabled improvements lead to long-term customer satisfaction and can ensure increased customer loyalty, decreasing marketing costs and increasing sales.

Some 26% of EU enterprises used **operational CRM** software applications to capture, store and make available information about the enterprise's customers to other business functions.

Furthermore, a CRM software application can be used to analyse customer information to identify

patterns of customer preferences and behaviour (**analytical CRM**). This information is essentially used for marketing purposes, such as sales promotions that are effective in creating interest in a product or for optimising market penetration through the use of alternative distribution channels.

Some 19% of enterprises used CRM for such sophisticated analytics. Overall, adoption levels of analytical CRM are much lower than those of operational CRM, except for enterprises in the accommodation sector, which reported using both types of CRM (33% for both).

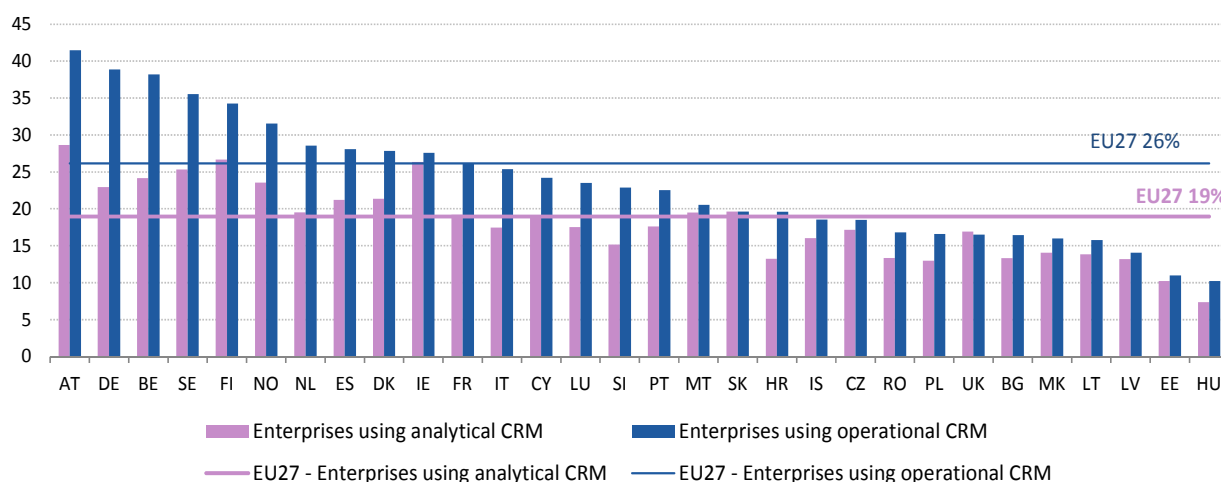
Compared with 2010, the use of CRM increased slowly for both types of CRM, regardless of the size of the enterprise. Overall, for many countries, further progress can still be expected as regards adopting both operational and analytical CRM in view of the potential benefits that customer-centric marketing practices may bring to enterprises. In particular, the integration of CRM with social media is expected to boost the use of CRM applications.

**Table 3: Enterprises using Customer Relationship Management, by enterprise size class, EU27, 2010 and 2012 (% of enterprises)**

	All enterprises		Small		Medium		Large	
	2010	2012	2010	2012	2010	2012	2010	2012
Enterprises using operational CRM	24	26	21	23	36	39	50	52
Enterprises using analytical CRM	17	19	14	16	27	30	40	43

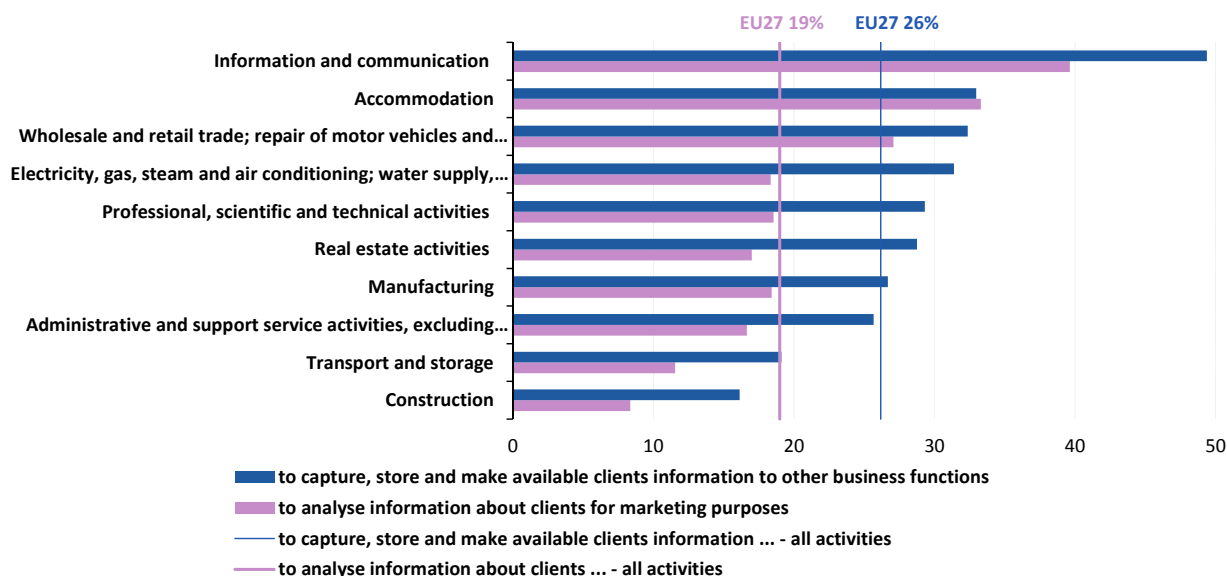
Source: Eurostat (online data code: [isoc\\_bde15dec](#))

**Figure 8: Enterprises using Customer Relationship Management, 2012 (% of enterprises)**



Source: Eurostat (online data code: [isoc\\_bde15dec](#))

**Figure 9: Enterprises using Customer Relationship Management, by economic activity, EU27, 2012 (% of enterprises)**



Source: Eurostat (online data code: [isoc\\_bde15dec](#))

## Almost one in 10 enterprises recruited or tried to recruit an ICT specialist

The integration of ICT in e-business and the adoption of e-commerce generate demand for skilled ICT specialists. **ICT specialists** are defined here as those who have ICT as their main job and hence are capable of dealing with a wide range of tasks concerning ICT systems.

They are employed across the whole economy, as many enterprises make use of ICT and have their own IT departments. Enterprise Resource Planning, Supply Chain Management and Customer Relationship Management are examples of ICT solutions employing specialists whose main job is to adapt, maintain and support such systems. By definition, enterprises in the information and communication sectors dominate the specific statistics on employment and recruitment of ICT specialists.

In 2012, one in five EU enterprises employed ICT specialists (21%) and in particular 70% of those in the information and communication sectors.

Overall, this sector accounts for almost 4% of all EU enterprises with at least 10 persons employed.

For other sectors, the percentage of enterprises that employed ICT specialists ranged from 12% to 34%, in construction and professional, scientific and technical activities.

In 2011, 8% of EU enterprises recruited or tried to recruit ICT specialists and 3% reported having hard-to-fill vacancies for jobs requiring persons with relevant ICT skills. For enterprises that

recruited or tried to recruit ICT specialists in 2011, 40% reported difficulties in filling vacancies.

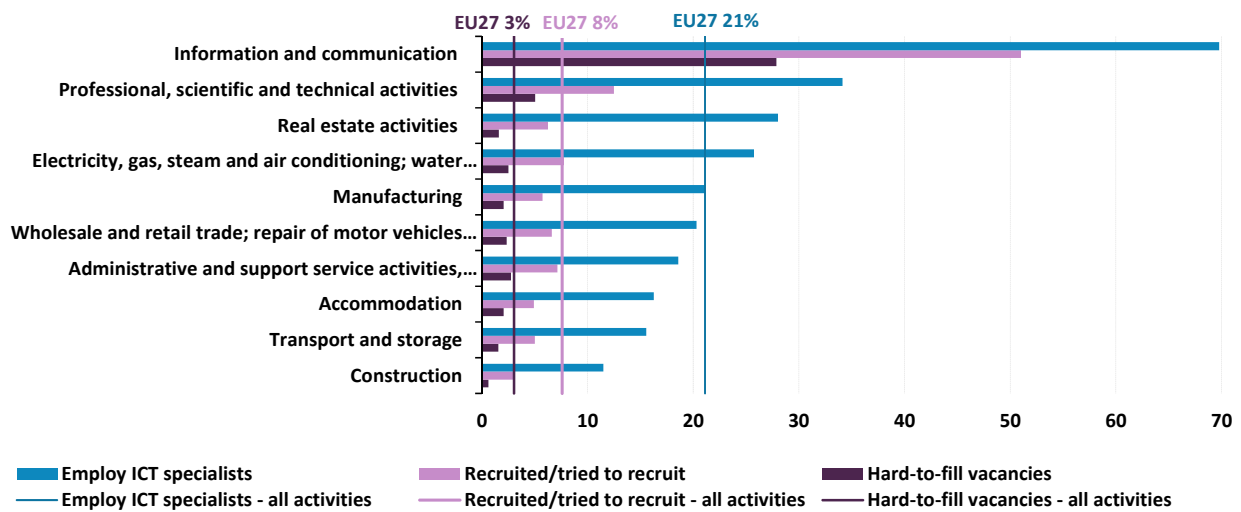
As well as employing ICT specialists, the information and communication sectors (51%) dominated the proportion of EU enterprises recruiting them. However, demand for ICT specialists at much lower levels was spread across enterprises in the rest of the economy. The percentage of EU enterprises other than in information and communication recruiting ICT specialists in 2011 ranged from 3% of enterprises in construction, to 13% in professional, scientific and technical activities.

Enterprises in all countries reported difficulties in recruiting ICT specialists. For those that did recruit specialists in 2011, the ratio of enterprises that reported hard-to-fill vacancies over those that did not report difficulties in recruitment was highest for Ireland, Luxembourg, Austria and Sweden.

Due to the evolving nature of the technical environment and versatile use of the Internet, enterprises have a fundamental need for skilled ICT specialists and employees with advanced ICT skills to manage and operate business applications. Some 9% of EU enterprises provided their ICT specialists with training to upgrade their ICT skills, while 17% provided training for other staff to develop their ICT skills.



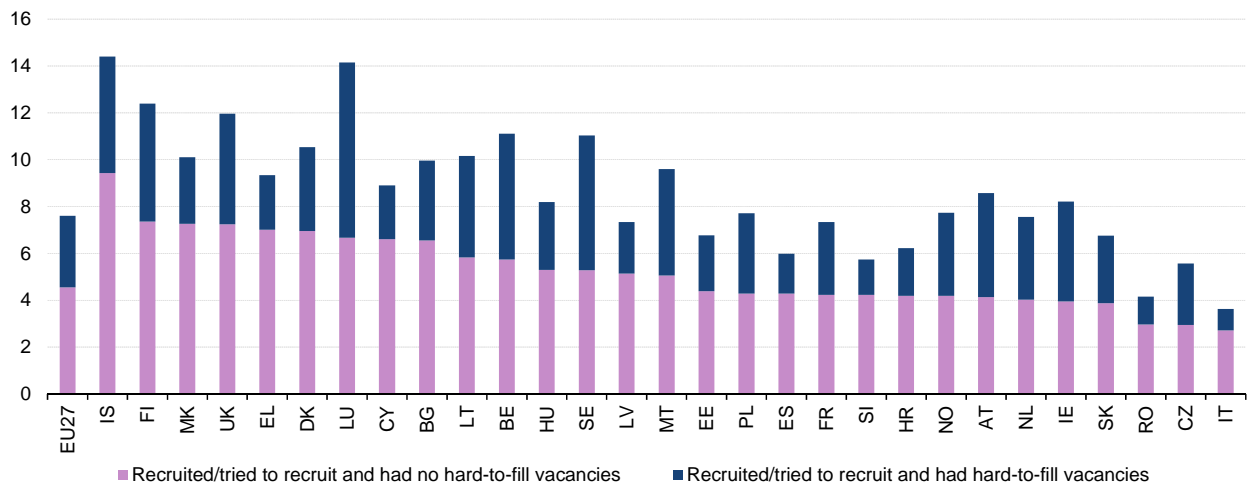
**Figure 10: Enterprises employing, recruiting and having hard-to-fill vacancies for ICT specialists, by economic activity, EU27, 2012 (% of enterprises)**



Figures on recruitment of ICT specialists and hard-to-fill vacancies refer to 2011

Source: Eurostat (online data codes: [isoc\\_ske\\_itспен2](#), [isoc\\_ske\\_itrcrn2](#))

**Figure 11: Enterprises that recruited ICT specialists, with and without difficulties in filling vacancies, 2011 (% of enterprises)**



Source: Eurostat (online data codes: [isoc\\_ske\\_itспен2](#), [isoc\\_ske\\_itrcrn2](#))

**Table 4: ICT specialists in enterprises, 2012 (% of enterprises)**

	Employ ICT specialists	Recruited/tried to recruit	Hard-to-fill vacancies	Training to ICT specialists	Training to other persons employed
	% of enterprises	% of enterprises	% of enterprises that recruited/tried to recruit	% of enterprises	% of enterprises
<b>EU27</b>	<b>21</b>	<b>8</b>	<b>40</b>	<b>9</b>	<b>17</b>
<b>BE</b>	28	11	48	13	28
<b>BG</b>	13	10	34	4	12
<b>CZ</b>	29	6	47	11	19
<b>DK</b>	27	11	34	13	24
<b>DE</b>	21	8	:	11	21
<b>EE</b>	18	7	35	6	11
<b>IE</b>	32	8	52	12	25
<b>EL</b>	35	9	25	10	11
<b>ES</b>	22	6	28	7	14
<b>FR</b>	15	7	42	8	17
<b>IT</b>	14	4	25	4	9
<b>CY</b>	24	9	26	11	27
<b>LV</b>	23	7	30	5	8
<b>LT</b>	22	10	43	6	8
<b>LU</b>	32	14	53	14	16
<b>HU</b>	30	8	35	7	11
<b>MT</b>	26	10	47	9	22
<b>NL</b>	26	8	47	12	8
<b>AT</b>	31	9	52	11	26
<b>PL</b>	14	8	44	6	8
<b>PT</b>	29	5	:	10	19
<b>RO</b>	4	4	29	2	4
<b>SI</b>	21	6	26	14	23
<b>SK</b>	25	7	43	11	21
<b>FI</b>	33	12	41	17	36
<b>SE</b>	22	11	52	11	20
<b>UK</b>	30	12	39	13	25
<b>IS</b>	27	14	35	14	25
<b>NO</b>	31	8	46	16	38
<b>HR</b>	21	6	33	11	26
<b>MK</b>	17	10	28	6	12

Figures on recruitment of ICT specialists, hard-to-fill vacancies and training refer to 2011

Source: Eurostat (online data codes: [isoc\\_ske\\_itspen2](#), [isoc\\_ske\\_itrcrn2](#), [isoc\\_ske\\_ittn2](#))

## METHODOLOGICAL NOTES

**Source:** Data presented in this publication are based on the results of the 2012 European Union survey on 'ICT usage and e-commerce in enterprises'. Statistics were obtained from enterprise surveys conducted by National Statistical Authorities in 2012. The survey reference period was January 2012, or for some questions, the year 2011.

**Sample size:** In 2012, 143 000 out of 1.5 million enterprises in the EU27 were surveyed. Of the 1.5 million enterprises, approximately 83 % were enterprises with 10-49 persons employed (small), 14 % with 50-249 (medium) and 3 % with 250 or more (large).

**Country codes:** European Union (27 countries): Belgium (BE), Bulgaria (BG), the Czech Republic (CZ), Denmark (DK), Germany (DE), Estonia (EE), Ireland (IE), Greece (EL), Spain (ES), France (FR), Italy (IT), Cyprus (CY), Latvia (LV), Lithuania (LT), Luxembourg (LU), Hungary (HU), Malta (MT), the Netherlands (NL), Austria (AT), Poland (PL), Portugal (PT), Romania (RO), Slovenia (SI), Slovakia (SK), Finland (FI), Sweden (SE) and the United Kingdom (UK). Iceland (IS), Norway (NO), Croatia (HR), the Former Yugoslav Republic of Macedonia (MK), Turkey (TR).

**Symbols:** Data in some tables are shown as '·' and refer to data that is unavailable, unreliable, confidential or not applicable. Unreliable data are included in the calculation of European aggregates.

**Main concepts:** The observation statistical unit is the **enterprise**, as defined in the Council Regulation (EEC) No 696/93 of 15 March 1993. The survey covered **enterprises** with at least 10 persons employed.

Economic activities correspond to the classification NACE Revision 2. The survey covered enterprises in the following economic sectors: manufacturing, electricity, gas and steam, water supply, construction, wholesale and retail trades, repair of motor vehicles and motorcycles, transportation and storage, accommodation and food service activities,

information and communication, real estate, professional, scientific and technical activities, administrative and support activities and repair of computers and communication equipment.

Certain figures (by economic activity) refer to the following selected economic sectors:

'Manufacturing', 'Electricity, gas, steam and air conditioning; water supply, sewerage, waste management and remediation activities', 'Construction', 'Wholesale and retail trade; repair of motor vehicles and motorcycles', 'Transport and storage', 'Accommodation', 'Information and communication', 'Real estate activities', 'Professional, scientific and technical activities' and 'Administrative and support service activities, excluding travel agency, etc'.

Enterprises are broken down by size: small (10-49 persons employed), medium (50-249) and large enterprises (250 or more).

The ICT adoption models (Figures with S-shaped curves) are for illustration purposes, to show the relative position of countries concerning the adoption of specific technologies in 2012. In the theoretical adoption model represented by the S-shaped curves, the time dimension is not included, indicating that the respective countries may progress at different speeds. The main characteristic of S-shaped curves is that cumulative ICT adoption rates (% enterprises) after a period of rapid acceleration follow a path of deceleration and finally saturation. The S-curve model is one of those frequently applied to studies and referenced in the literature concerning ICT adoption.

**Hard-to-fill vacancies** refer to a range of situations in which enterprises find it hard to find persons with particular skills (hard-to-fill vacancies due to skill shortages).

*Data presented in this Statistics in Focus could differ from the data in the database, due to updates made after the data extractions used for this publication.*

## Further information

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Further information about 'Information society statistics'

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