

NB-51-03-285-EN-C

# A pocketbook of e-business indicators

2002/2003 edition

A portrait of  
e-business in 15 sectors  
of the EU economy

Published by the



ISBN 92-894-5117-3



Publications Office  
[Publications.eu.int](http://Publications.eu.int)

ISBN 92-894-5117-3



0 789289 751178



European  
Commission

This booklet has been prepared by empirica Gesellschaft für Kommunikations- und Technologieforschung mbH, on behalf of the European Commission, Enterprise Directorate General. It is a publication in the context of the "European e-Business W@tch", which is implemented by empirica GmbH in co-operation with DIW Berlin – German Institute for Economic Research and Databank Consulting (Milan) based on a service contract running from January 2002 until June 2003.

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A great deal of additional information on the European Union is available on the internet. It can be accessed through the Europa server:  
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Luxembourg: Office for Official Publications  
of the European Communities, 2003

ISBN 92-894-5117-3

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*Printed in Germany*

The European Commission, Enterprise Directorate General, launched the e-Business W@tch market observatory to monitor the growing maturity of electronic business across the European Union. The observatory covers a total of 15 sectors of the economy, of which seven are from manufacturing and eight are financial and service sectors. Results are published at quarterly intervals in the form of sector impact studies and newsletters. A set of statistics on e-business is made available on the internet. This booklet presents key statistics from an enterprise survey carried out in mid 2002.

All publications of the e-Business W@tch – including this booklet – are available in electronic format on the internet at:

[www.ebusiness-watch.org](http://www.ebusiness-watch.org)

or via the Europa server:

[www.europa.eu.int/comm/enterprise/ict/policy/watch/index.htm](http://www.europa.eu.int/comm/enterprise/ict/policy/watch/index.htm)

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**The need for analysis at sector level**

European policy is in many areas increasingly focused on promoting the business techniques and new ways of working which will provide the economic and social foundation of the knowledge based society in Europe. For instance, the eEurope 2005 Action Plan as endorsed by the Seville European Council in June 2002 includes Action 3.1.2. "A dynamic e-business environment" with the goal "to promote take-up of e-business with the aim of increasing the competitiveness of European enterprises and raising productivity and growth through investment in information and communication technologies, human resources (notably e-skills) and new business models".

To this end, some indication of progress and of areas requiring active support is essential. Despite the improved statistical coverage of ICT and e-business developments, there is still a lack of reliable empirical information (i) about the extent and nature of e-business development at the sector level, and (ii) in particular about the impact of this development on individual enterprises and on the value chain within sectors. For this reason in January 2002 the European Commission, DG Enterprise, launched the "e-Business W@tch" as a market observatory with the objective of providing this information. The e-Business W@tch has published a set of e-Business Impact Studies for 15 sectors of the economy and carried out a representative survey of more than 9,200 enterprises from these sectors in 2002. All data in this booklet are based on this survey.

**Basic access to ICT is no longer a barrier**

Basic ICT infrastructure and access are no longer barriers to e-business uptake. Even among small enterprises (0-49 employees), 94% use computers and 84% have access to the Internet in 2002. The usage of e-mail and of the WWW have become nearly ubiquitous in the world of business. However, there are still significant differences with respect to the quality of businesses' internet access, especially with regard to bandwidth. In most of the sectors, many of the small enterprises still use an analogue dial-up modem to connect to the net. This indicates low levels of usage (e.g. e-mail) rather than active usage of networks for e-business.

## E-commerce activities: fast adoption of online purchasing

While sell-side e-commerce, and particularly B2C, has not yet reached the volumes anticipated during the boom time of the Internet economy, online purchasing seems to spread fast. 36% of enterprises (accounting for 42% of employment) and nearly half of all large enterprises say they make online purchases of MRO goods or direct production goods. In the ICT services, in the media & printing sectors and in business services the share of companies purchasing online is already above 45% (in ICT services even at 80%).

In this context, electronic B2B marketplaces on the Internet have been paid much attention. About 5-6% of European enterprises used e-marketplaces in 2002 and 3% planned to do so until mid 2003. This may seem a low level of usage at first sight. However, marketplaces are important as the intensity of trade (volume of transactions) is often higher than is the case with other online trading channels. Usage also depends on the sector. In the chemical industries, transport equipment manufacturing and in ICT services B2B marketplaces have clearly gained momentum.

In spite of the as yet rather low level of online sales (if measured as percentage of total sales), it is likely that we have only seen the beginnings, even in B2C. The internet has become a powerful tool for consumers to compare offers in an efficient way. With the introduction of the Euro in most of the EU countries, and the increase and further improvement of public online marketplaces (including peer-to-peer market places and auction platforms) and meta-services (e.g. price-finders), the transparency of prices across regions will further increase. And considering that today's youth – the first generation growing up with the internet – is likely to develop a different shopping behaviour than their parents and grand-parents, the potential for B2C electronic commerce is probably still huge.

## E-business integration – the big issue for the years to come

Experts unanimously agree that the new challenge in the e-business (r)evolution many companies are facing today is to integrate the "e"-activities into their general business processes instead of conducting e-commerce as a separate business. This may require more advanced e-business solutions, but implementing them in the company is cost intensive and requires a high level of managerial skills. Today, sophisticated solutions for Customer Relationship Management (CRM) and Supply Chain Management (SCM) are used mainly by large enterprises and by specific sectors.

On the other hand, online technologies are increasingly used for a number of processes which characterise working routines in companies and facilitate exchanging information with customers and suppliers. 45% of employees work in companies that use online technologies for collaborative work purposes, for instance to share documents. Enterprises accounting for 26% of employees use online technologies to track working hours and production time. And online e-learning applications are used by about 12% of enterprises, accounting for 19% of employment.

Most of these functions are more important for large enterprises than for medium-sized and especially for small ones, and there are also considerable differences by sector. For instance, about 40% of employees in the ICT services, electronics and transport equipment manufacturing sectors work in enterprises that use online technologies to collaborate with business partners in designing products. However, the figure is only between 15-18% in other manufacturing sectors such as metal products and machinery and equipment.

Sectors also differ in the degree to which they have integrated their online sales with the backend systems. In the financial services and some of the manufacturing sectors, a significant percentage of those companies selling online already report that integration is accomplished. Other sectors are less advanced in that respect, including retail and tourism where online selling is supposed to play a relatively important role.

## Perceived impacts of electronic business activities

In 2002, more than 10% of European enterprises say that e-business constitutes a "significant part" of the way they operate and nearly 50% feel that it constitutes at least some part of their activities. The impact is most significant in those sectors which manufacture or operate IT and electronics themselves (ICT services, electronics industry) and in sectors with a high potential for digitisation of service delivery (publishing, business services). In tourism, the awareness of e-business impacts is also very high. On the other hand, there are late adopters where only about a third of firms reports that e-business is already important. The most "conservative" sectors in this respect are the food and beverages industry, retail and the manufacture of metal products.

The most significant impacts of e-business concern the internal work processes. More than a quarter of all enterprises say that these have significantly or somewhat changed through e-business practices. About 20% of enterprises report that the organisation structure and the relation to customers and suppliers has significantly or somewhat changed.

Looking at the impact of e-commerce activities, close to 60% of those firms that use e-procurement report a "positive" or even "very positive" impact on procurement costs and on their internal business processes. Most of the others say there was "no impact", while only few observe a negative impact. Firms that sell online tend to observe positive effects on sales volumes, number of customers, efficiency of internal business processes and an expansion of the sales area. The quality of customer service is the area where most companies (28%) have achieved "very positive" effects through selling online. Reducing costs for logistics and inventory, on the other hand, is the impact area with the lowest degree of satisfaction.

Thus, the overall "business climate" for electronic business is fairly positive – though not enthusiastic. A majority of firms are fairly satisfied and some are very satisfied with the effect of their e-business solutions. However, there are the disappointed ones as well – and to a higher degree among the large enterprises (19%) than among the small and medium-sized ones (12% / 15% of enterprises).

## Indicator 1: Type of internet access

EU-4 by sector	Analogue dial-up modem	ISDN	DSL	Other fixed connection	Other connection
Food & beverages, tobacco	26.9	50.5	21.7	13.8	1.2
Media & printing	19.0	35.1	25.9	31.1	2.6
Chemical industries	12.7	28.1	17.4	40.2	7.4
Metal products	23.4	43.4	20.3	13.6	2.3
Machinery and equipment	15.4	36.1	28.9	30.3	0.6
Electronics	5.5	23.5	23.9	49.9	2.5
Transport equipment	3.1	54.2	17.9	20.6	0.3
Retail	26.7	45.8	24.2	21.4	4.0
Tourism	25.9	36.9	27.8	13.3	3.0
Banking and leasing	10.8	20.5	19.8	56.8	3.3
Insurance and pension funding	10.2	33.1	24.0	47.0	0.8
Real estate activities	19.7	43.9	28.3	11.3	2.4
Business services	16.8	38.8	31.9	27.6	3.3
ICT services	9.4	23.1	24.6	60.2	4.5
Health and social services	25.7	47.2	22.7	13.2	1.3
EU-4 total	19.0	39.0	25.0	26.9	2.9
EU-15	19.0	38.6	25.6	26.4	3.0

Source: e-Business W@tch (2002). Figures employment-weighted (enterprises comprising ...% of employees). Base: enterprises with internet access (N=8479 for EU-15; N=5417 for EU-4). Reporting period: June/July 2002. EU-4 includes D, F, I, UK.

Basic ICT infrastructure and access are no longer barriers to e-business uptake. Even among small enterprises (0-49 employees), 94% use computers and 84% had access to the Internet in 2002. This does not say anything about PC density within businesses, though, which has not been investigated by this survey. There are significant differences, however, between sectors and size-classes with respect to the quality of businesses' internet access. 28% of the small enterprises still connect to the Internet with an analogue dial-up modem.

Internet access by size-class / region  
Size-class (EU-15)\* Country:\*\*  
0-49 empl. 84.2 Germany 90.0  
50-249 empl. 96.1 France 89.0  
250+ empl. 99.0 Italy 94.7  
UK 91.5  
\* figures weighted by number of enterprises  
\*\* figures weighted by employment

Indicator 2: Usage of network applications and infrastructure

EU-4 by sector	e-mail	WWW	Intranet	Extranet	LAN	WAN
Food & beverages, tobacco	82.1	79.0	38.6	10.3	59.8	28.1
Media & printing	96.2	93.6	57.7	24.8	74.2	37.0
Chemical industries	94.6	94.0	61.5	22.9	82.5	48.4
Metal products	88.8	84.2	40.5	9.8	62.2	17.0
Machinery and equipment	92.6	88.9	60.1	15.2	75.2	29.2
Electronics	98.3	92.2	79.9	25.1	91.9	51.8
Transport equipment	98.4	97.5	74.3	16.2	90.3	48.9
Retail	76.1	72.8	41.7	12.5	54.3	28.5
Tourism	90.1	81.4	40.6	12.9	46.8	18.6
Banking and leasing	93.8	93.2	73.9	29.0	95.3	69.9
Insurance and pension funding	92.8	93.8	78.9	39.9	86.5	63.3
Real estate activities	90.7	84.6	34.2	11.1	52.7	17.4
Business services	93.4	92.0	50.9	23.7	67.6	31.9
ICT services	98.5	97.6	85.3	54.3	95.8	72.6
Health and social services	73.5	72.0	33.5	15.2	52.4	21.5
EU-4 total	87.4	84.4	51.0	19.5	66.5	34.1
EU-15	87.1	83.6	50.8	19.7	66.3	33.8

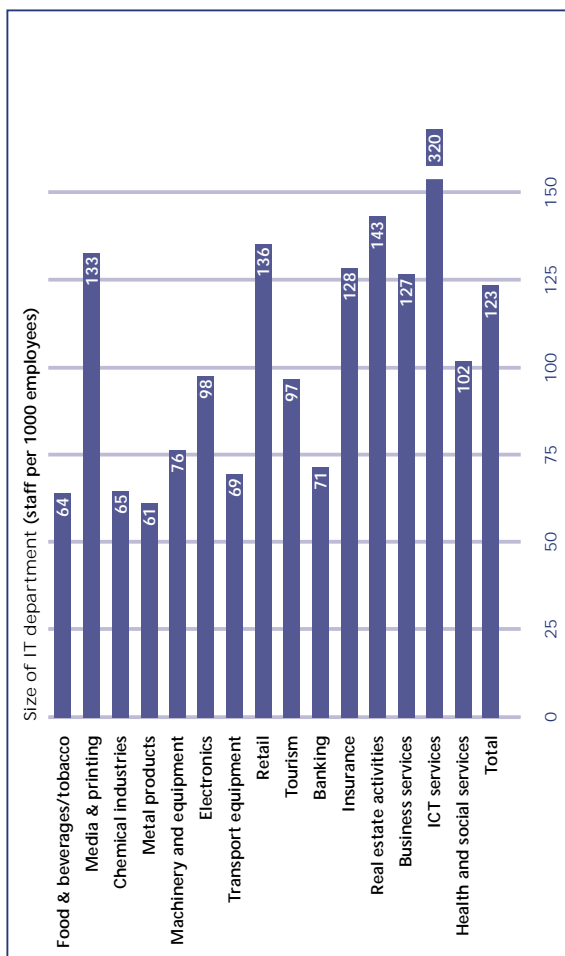
Source: e-Business W@tch (2002). Figures employment-weighted (enterprises comprising ...% of employees). Base: all enterprises (N=9264 for EU-15; N=5917 for EU-4). Reporting period: June/July 2002. EU-4 includes D, F, I, UK.

The usage of e-mail and of the WWW have become nearly ubiquitous in the world of business, and a vast majority of enterprises – except very small ones – have implemented a local area network to connect their computers. About 30% of all enterprises (representing 50% of employees) use an intranet. Infrastructure deployment is not yet completed, though. More than 6% of companies say they intend to implement an intranet until mid 2003 and more than 10% of the medium and large enterprises have plans to set up a Wide Area Network.

Companies using an intranet  
 Size-class (EU-15)\* Country\*\*  
 0-49 empl. 27.7 Germany 47.5  
 50-249 empl. 56.2 France 53.3  
 250+ empl. 76.7 Italy 53.6  
 UK 52.9

\* figures weighted by number of enterprises  
 \*\* figures weighted by employment

Indicator 3: Relative size of the IT department (headcount per 1000 employees)



Source: e-Business W@tch (2002). Base: all enterprises (N=9264 for EU-15; N=5917 for EU-4). Reporting period: June/July 2002. EU-4 includes D, F, I, UK.

The e-Business W@tch asked companies how many people (in equivalents of full time jobs) they employed for maintaining their IT systems and networks and computed the figure as "staff per 1000 employees". The relative demand for IT staff differs considerably between sectors. However, aggregate results as shown in the chart conceal that large companies clearly benefit from economies of scale. As this ratio does not include information about the qualifications of the staff counted, it should be used as an indication rather than as an exact measurement.

Relative size of the IT department (headcount per 1000 employees) by size class:  
 By size-class (EU-15)  
 0-49 empl. 124.4  
 50-249 empl. 40.7  
 250+ empl. 20.3

Indicator 4: IT skills gap

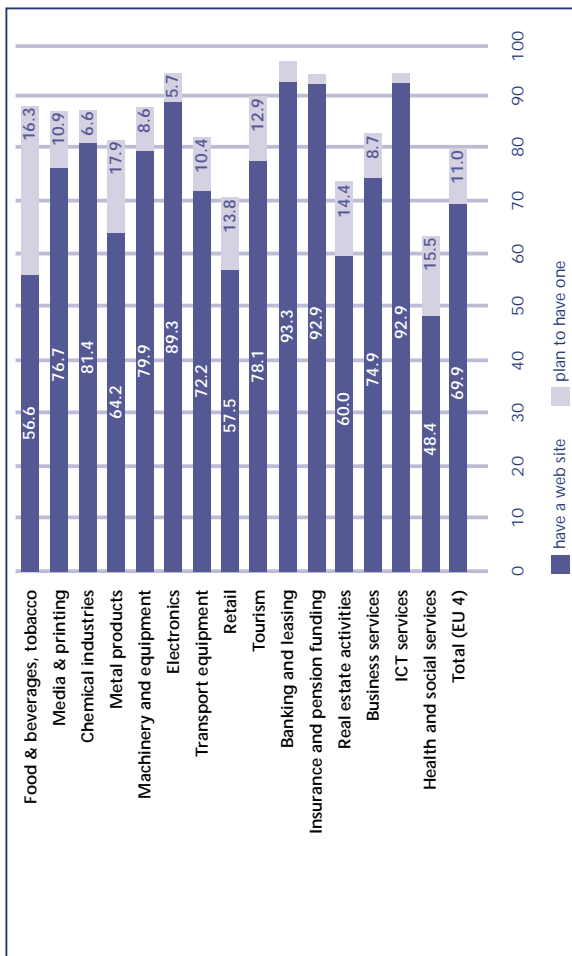
EU-4 by sector	Have recruited/ tried to recruit IT specialists (past 12 months)	... of those have experienced great difficulties	... of those have experienced some difficulties	% of total with difficulties in finding IT specialists
Food & beverages, tobacco	4.1	16.3	42.7	2.4
Media & printing	13.5	20.6	26.6	6.4
Chemical industries	12.5	15.0	28.4	5.4
Metal products	8.7	27.2	14.9	3.6
Machinery and equipment	12.9	21.7	21.5	5.6
Electronics	16.1	18.9	31.4	8.1
Transport equipment	9.7	17.9	20.7	3.8
Retail	10.2	12.0	25.6	3.8
Tourism	16.4	17.1	29.8	7.7
Banking and leasing	16.7	14.4	21.6	6.0
Insurance and pension funding	15.2	9.5	12.9	3.4
Real estate activities	11.1	8.3	20.2	3.2
Business services	17.3	33.3	28.4	10.7
ICT services	40.3	27.0	23.9	20.5
Health and social services	8.6	20.1	19.9	3.5
<b>EU-4 total</b>	<b>13.3</b>	<b>21.7</b>	<b>25.8</b>	<b>6.3</b>
<b>EU-15</b>	<b>13.0</b>	<b>21.8</b>	<b>26.0</b>	<b>6.2</b>

Source: e-Business Watch (2002). Figures enterprise-weighted (% of enterprises). Base: all enterprises (N=9264 for EU-15; N=5917 for EU-4) EU-4 includes D, F, I, UK.

About 13% of the enterprises in the EU (comprising 29% of employees) report that they recruited (or at least tried to recruit) IT specialists between 6/2001 and 6/2002. About half of those say they experienced some or even great difficulties. The skills gap varies by sector. It is most urgent within the ICT services sector itself where more than a fifth of all companies – in spite of the economic downturn – seems to have difficulties finding sufficient IT staff. In the business services sector, more than 10% of all companies still report problems.

Companies having recruited or tried to recruit IT specialists:  
 Size-class (EU-15)\* Country\*\*  
 0-49 empl. 12.8 Germany 26.7  
 50-249 empl. 27.7 France 28.2  
 250+ empl. 46.9 Italy 27.1  
 UK 35.4  
 \* figures weighted by number of enterprises  
 \*\* figures weighted by employment

Indicator 5: Companies having a website



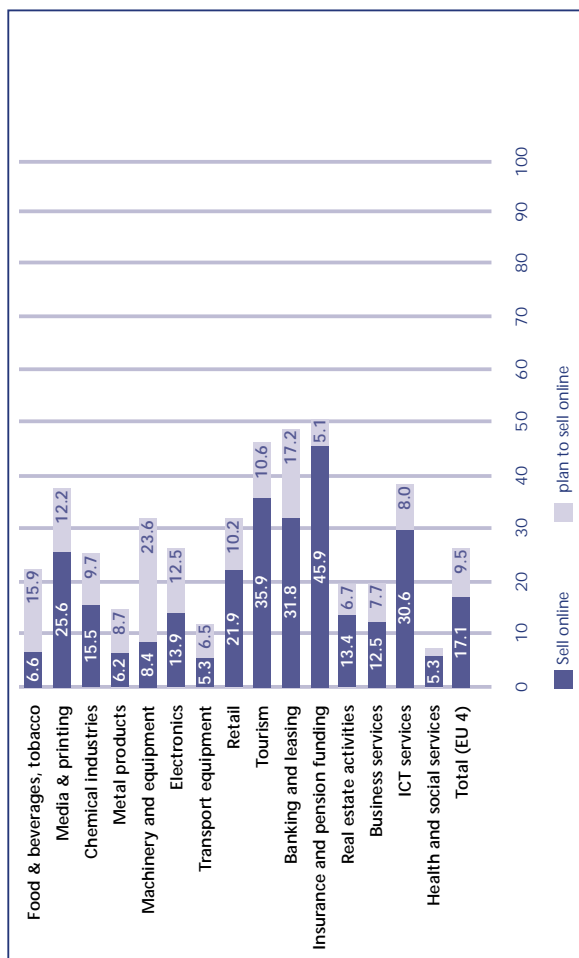
Source: e-Business Watch (2002). Figures employment-weighted (enterprises comprising ...% of employees). Base: all enterprises (N=9264 for EU-15; N=5917 for EU-4). Reporting period: June/July 2002. EU-4 includes D, F, I, UK.

Seven out of ten companies in the EU have at least some sort of a web presence, and another 11% report plans until mid 2003 to set up a site. Even among small enterprises, a majority (52%) has a website. In the past years, "having a website" used to be a key indicator for e-commerce readiness. It should not be overemphasized, though, as the figure itself says nothing about the sophistication of the web presence nor about the integration of its function(s) with other business processes – a key challenge for many businesses.

Companies with a website:  
 Size-class (EU-15)\* Country\*\*  
 0-49 empl. 51.6 Germany 70.7  
 50-249 empl. 77.2 France 56.1  
 250+ empl. 88.9 Italy 72.9  
 UK 77.3  
 \* figures weighted by number of enterprises  
 \*\* figures weighted by employment



Indicator 6: Companies selling online



Source: e-Business W@tch (2002). Figures employment-weighted (enterprises comprising ...% of employees). Base: all enterprises (N=9264 for EU-15; N=5917 for EU-4). Reporting period: June/July 2002. EU-4 includes D, F, I, UK.

About 12% of enterprises (comprising 17% of employees) make online sales on the internet, through EDI or other online networks. Selling online is much more important for some sectors than for others: Tourism, where online reservation systems have spread fast, is a leading sector in that respect. The financial sectors have also been among the early adopters. Finally, selling online is particularly convenient for industries dealing with digital goods and services (e.g. publishing, and software). Adoption of sell-side e-commerce also differs widely between countries (cf. table).

Companies selling online by size-class/region:

Size-class (EU-15)*	Country**
0-49 empl.	18.9
50-249 empl.	12.3
250+ empl.	14.2
	France 10.9
	Italy 11.9
	UK 22.2

\* figures weighted by number of enterprises  
\*\* figures weighted by employment

Indicator 7: E-commerce channels used for selling online

EU-4 by sector	Company website	Electronic market place(s)	Extranet	EDI	Mobile e-commerce (e.g. WAP)
Food & beverages, tobacco	60.9	40.5	23.8	40.4	18.1
Media & printing	92.6	29.3	15.9	3.4	7.3
Chemical industries	67.3	60.4	0.0	0.0	0.7
Metal products	73.0	32.1	4.5	0.0	4.5
Machinery and equipment	88.0	51.7	23.1	16.7	0.9
Electronics	74.0	45.3	59.0	59.4	1.9
Transport equipment	23.1	71.9	30.3	62.5	31.6
Retail	87.2	37.2	1.7	18.1	2.2
Tourism	85.1	27.1	5.2	9.5	10.6
Banking and leasing	87.9	23.7	15.2	0.6	15.1
Insurance and pension funding	98.3	42.0	23.3	0.4	6.3
Real estate activities	78.2	26.6	10.1	5.8	3.2
Business services	95.8	22.2	11.4	16.6	0.8
ICT services	84.3	41.1	30.3	17.2	5.9
Health and social services	63.6	42.9	0.0	21.3	1.4
EU-4 total	82.6	34.8	11.9	14.7	5.9
EU-15	84.1	33.9	12.3	15.7	7.0

Source: e-Business W@tch (2002). Figures employment-weighted (enterprises comprising ...% of employees). Base: enterprises selling online (N=1346 for EU-15; N=805 for EU-4). Reporting period: June/July 2002. EU-4 includes D, F, I, UK.

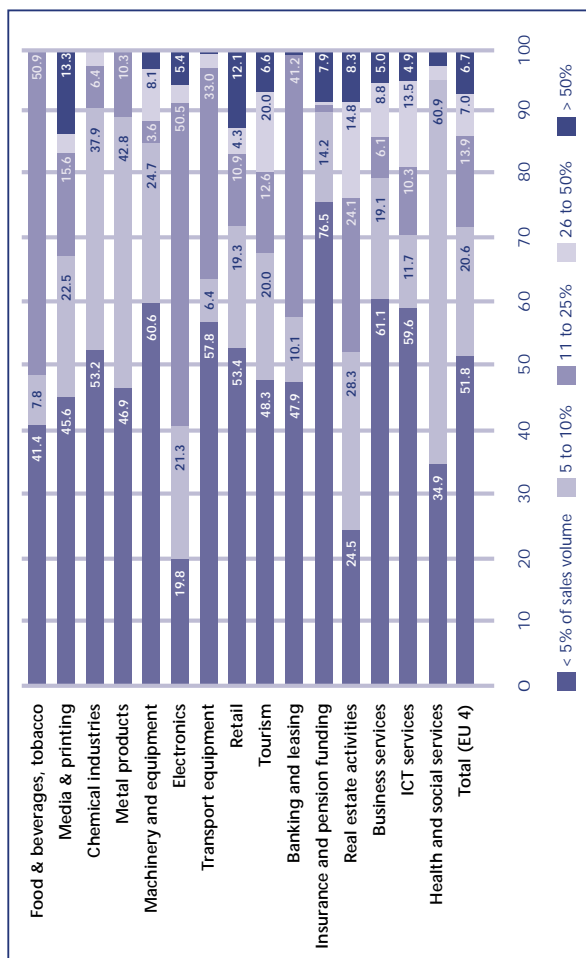
Overall, more than 80% of those companies that make online sales do so through their own internet website. Different industries, however, have developed their specific channels and mechanisms for trading online. Manufacturers of transport equipment, for instance, trade mainly on B2B electronic marketplaces and through EDI, but not on their own website. In the electronics industry, suppliers access the extranet of their business customers. In other sectors such as the food & beverages industry a multi-channel strategy seems to develop.

Companies using EDI based e-commerce:

Size-class (EU-15)*	Country**
0-49 empl.	13.1
50-249 empl.	5.0
250+ empl.	7.1
	France 4.1
	Italy 7.2
	UK 23.1

\* figures weighted by number of enterprises  
\*\* figures weighted by employment

Indicator 8: Share of online sales (as percent of total shares)



Source: e-Business W@tch (2002). Figures employment-weighted (enterprises comprising ...% of employees). Base: enterprises selling online (N=1346 for EU-15; N=805 for EU-4). Reporting period: June/July 2002. EU-4 includes D, F, I, UK.

Although business-to-consumer e-commerce is now gaining momentum in a number of areas (for instance sales of books and CDs, consumer electronics, and increasingly – fashion), the share of goods and services sold online is still at a very low level (most estimates say between 1-2% of the total sales volume in the consumer market). Even among e-sellers, more than 50% report that online sales still constitute less than 5% of their total sales. On the other hand, e-commerce activities are becoming very important in the prepurchase/sale phase (e.g. browsing, usage of "price finders").

Share of e-sellers making more than 10% of their sales online:

Size-class*	Country**
0-49 empl.	Germany 21.6
50-249 empl.	France 31.7
250+ empl.	Italy 25.0
	UK 34.5

\* figures weighted by number of enterprises  
\*\* figures weighted by employment

Indicator 9: Method of processing online orders

EU-4 by sector	Online orders are fully integrated with the back-end system	Incoming online orders generate an automatic e-mail	Company receives a fax informing about online orders	Information about online orders in other form(s)	Online orders trigger business processes
Food & beverages, tobacco	16.0	62.8	19.7	1.5	38.2
Media & printing	31.2	55.7	6.5	3.2	48.3
Chemical industries	0.0	56.6	2.0	1.6	42.7
Metal products	0.0	56.9	15.6	0.0	24.7
Machinery and equipment	24.6	55.7	3.4	10.3	34.0
Electronics	53.7	36.4	6.0	1.9	57.7
Transport equipment	32.5	16.5	34.0	0.6	78.3
Retail	16.2	72.2	3.2	8.4	29.9
Tourism	17.6	67.3	7.0	2.9	32.2
Banking and leasing	55.7	18.6	0.5	7.6	78.6
Insurance and pension funding	43.3	37.4	5.8	6.1	43.2
Real estate activities	6.3	65.9	6.5	10.6	21.5
Business services	5.9	54.6	8.2	10.0	40.2
ICT services	66.2	14.0	0.8	8.4	55.0
Health and social services	21.8	39.9	15.0	21.8	35.7
EU-4 total	25.6	52.2	5.8	7.1	41.5
EU-15	26.2	50.7	6.9	7.3	42.6

Source: e-Business W@tch (2002). Figures employment-weighted (enterprises comprising ...% of employees). Base: enterprises selling online (N=1346 for EU-15; N=805 for EU-4). Reporting period: June/July 2002. EU-4 includes D, F, I, UK.

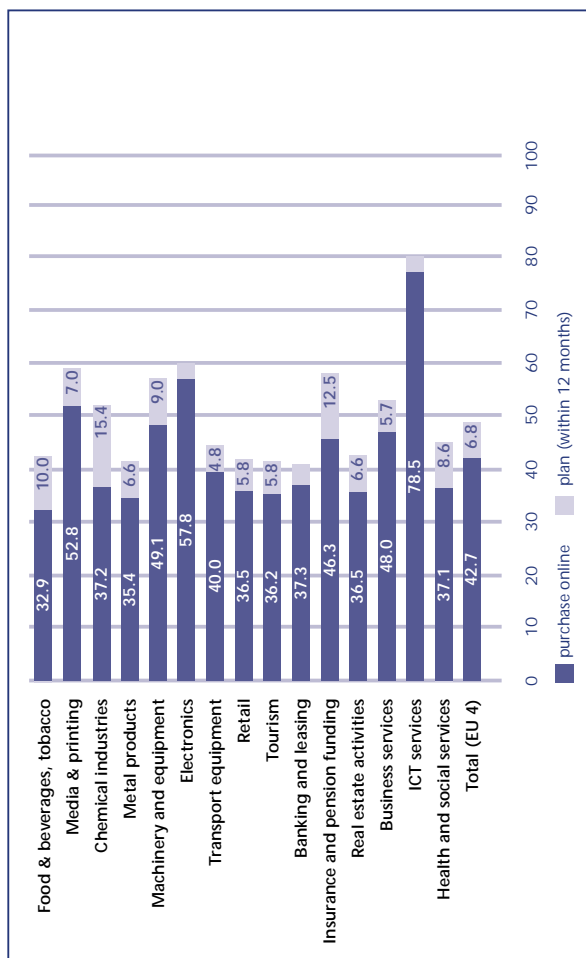
The main challenge of e-business is to successfully integrate business processes electronically. For many businesses this is still a long (and painful) way to go. Today, only one out of four companies (and less than one out of ten small companies) that sell online say that incoming online orders are fully integrated with the backend system. The ICT, electronics and financial services sectors are most advanced in that respect. In retail, by contrast, notification by e-mail is the main method of processing online orders.

Companies where online orders are fully integrated with the back-end system (as percentage of companies selling online):

Size-class (EU-15)*	Country**
0-49 empl.	Germany 22.4
50-249 empl.	France 32.3
250+ empl.	Italy 35.1
	UK 23.9

\* figures weighted by number of enterprises  
\*\* figures weighted by employment

Indicator 10: Companies purchasing online



Source: e-Business Watch (2002). Figures employment-weighted (enterprises comprising ...% of employees). Base: all enterprises (N=9264 for EU-15 N=5917 for EU-4). Reporting period: June/July 2002. EU-4 includes D, F, I, UK.

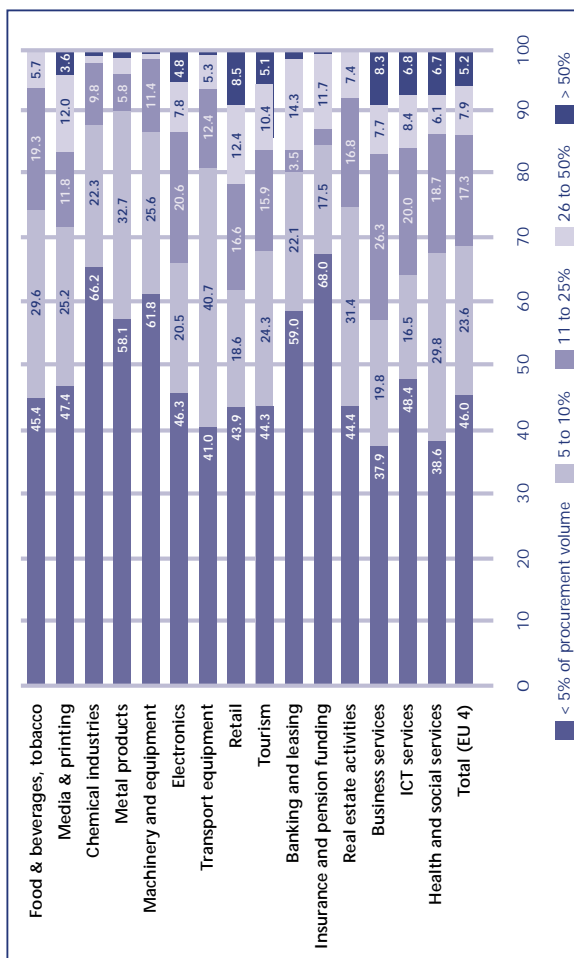
E-procurement has developed faster than selling online and plays an important role today in any sector of the economy. Adoption plans indicate that diffusion will further increase. As companies from all sectors and size classes make increasing use of online purchasing, the level of adoption differs mainly between regions, in many cases reflecting the general progress of the information society. In the UK and Germany, for instance, more than 50% of enterprises say they already use e-procurement. In France and Italy, the share is currently lower.

Companies procuring online by size-class and region:

Size-class (EU-15)*	Country**
0-49 empl.	Germany 50.7
50-249 empl.	France 27.5
250+ empl.	Italy 46.1
	UK 49.7
	Italy 29.6
	UK 50.5

\* figures weighted by number of enterprises  
\*\* figures weighted by employment

Indicator 11: Share of online purchases (as percentage of total purchases)



Source: e-Business Watch (2002). Figures employment-weighted (enterprises comprising ...% of employees). Base: companies procuring online (N=3786 for EU-15; N=2387 for EU-4). Reporting period: June/July 2002. EU-4 includes D, F, I, UK.

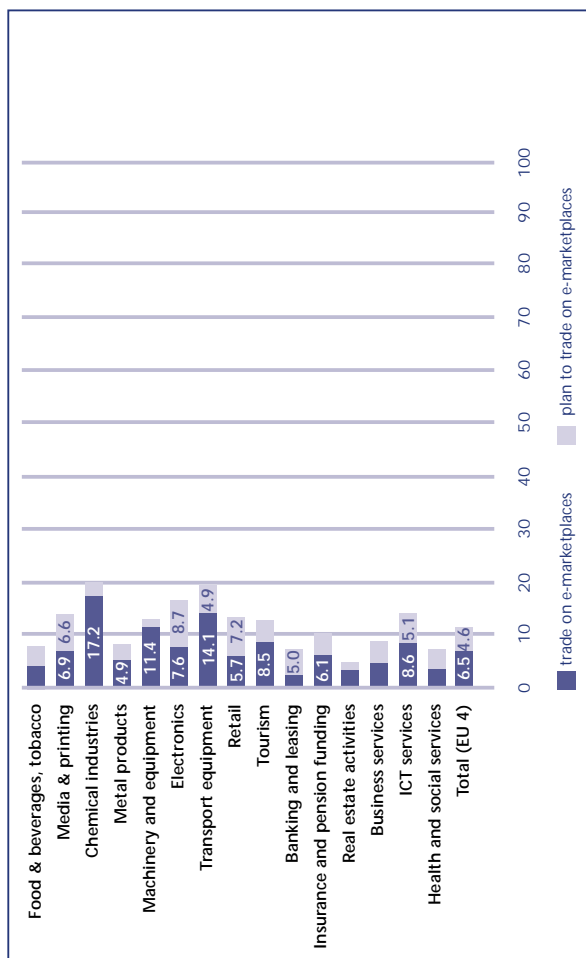
Similarly to selling online, the average percentage of goods and services procured online is still rather low. 60% of all enterprises that use e-procurement (but accounting for 70% of employees) make "only" up to 10% of their total purchases online. An interesting finding with respect to e-procurement is that smaller companies – if they use e-procurement – are more intensive users than large companies. On the aggregate level, it is estimated that e-procurement via the internet and EDI accounts for about 10-15% of all purchases of companies. The percentage may vary by region, though.

Percentage of companies procuring more than 10% of their total purchases online (out of those companies procuring online):

Size-class (EU-15)*	Country**
0-49 empl.	Germany 26.5
50-249 empl.	France 22.7
250+ empl.	Italy 23.7
	UK 30.5
	UK 39.0

\* figures weighted by number of enterprises  
\*\* figures weighted by employment

Indicator 12: Companies trading on B2B electronic marketplaces



Source: e-Business W@tch (2002). Figures employment-weighted (enterprises comprising ...% of employees). Base: all enterprises (N=9264 for EU-15 N=5917 for EU-4). Reporting period: June/July 2002. EU-4 includes D, F, I, UK.

Unlike e-commerce sites of individual companies (sell-side solutions), electronic business-to-business marketplaces feature several suppliers. They bring together buyers and sellers by facilitating different kinds of transactions, such as catalogue-based offering or purchasing, auctions and calls for tender. Although the overall percentage of companies trading on marketplaces is still rather low (5-6%), marketplaces play an important role in specific sectors, most of all in the chemical industries and in transport equipment manufacturing. Large enterprises are more likely to use marketplaces than SMEs.

Companies trading on B2B electronic marketplaces by size-class and region:

Size-class (EU-15)*	Country**
0-49 empl.	5.3 Germany 10.3
50-249 empl.	5.2 France 2.3
250+ empl.	8.6 Italy 4.6
	UK 5.4

\* figures weighted by number of enterprises  
\*\* figures weighted by employment

Indicator 13: E-business sophistication: Diffusion of special e-business solutions

EU-4 by sector	CRM solution		SCM solution		ERP system	
	Use	Plan to use (within the next 12 months)	Use	Plan to use (within the next 12 months)	Use	Plan to use (within the next 12 months)
Food & beverages, tobacco	13.6	3.1	4.1	6.0	18.8	4.9
Media & printing	15.3	6.3	5.7	3.8	17.6	2.8
Chemical industries	23.3	15.0	12.5	5.9	50.1	4.2
Metal products	5.9	6.2	4.9	2.9	24.9	4.7
Machinery and equipment	17.6	6.1	8.4	1.7	36.6	4.0
Electronics	32.5	8.6	18.9	10.9	60.5	2.7
Transport equipment	18.3	1.2	16.8	5.8	53.4	0.6
Retail	15.8	8.5	9.1	2.3	13.8	2.0
Tourism	12.9	2.3	4.1	0.8	6.5	2.3
Banking and leasing	39.2	12.3	2.3	0.1	11.7	0.3
Insurance and pension funding	30.1	12.4	5.6	5.6	11.5	8.1
Real estate activities	5.7	2.8	2.6	1.0	5.2	2.4
Business services	16.9	5.1	3.5	2.2	13.1	2.7
ICT services	42.0	6.3	8.8	3.0	41.1	5.1
Health and social services	4.1	1.3	1.6	2.0	5.1	0.7
EU-4 total	17.2	5.9	6.5	2.9	20.2	2.6
EU-15	17.4	6.1	6.7	3.3	20.3	2.8

Source: e-Business W@tch (2002). Figures employment-weighted (enterprises comprising ...% of employees). Base: all enterprises (N=9264 for EU-15; N=5917 for EU-4). Reporting period: June/July 2002. EU-4 includes D, F, I, UK.

The IT and software industries offer special software solutions to help enterprises integrate business processes. However, exploiting this potential is still in a very early stage. CRM solutions, for instance, have become a hot topic and senior management issue as they consume considerable amounts of money, but there is still a lot of uncertainty about the return on investment at the end of the day. Because of the high fixed costs, sophisticated e-business solutions are mainly used by large companies.

Companies using an electronic CRM system by size-class and region:

Size-class (EU-15)*	Country**
0-49 empl.	6.0 Germany 18.7
50-249 empl.	12.7 France 8.9
250+ empl.	32.2 Italy 11.4
	UK 24.8

\* figures weighted by number of enterprises  
\*\* figures weighted by employment

Indicator 14: Usage of online technologies for various business processes

EU-4 by sector	Online collaboration with business partners		Electronic exchange of documents
	for designing products	to forecast product demands	
Food & beverages, tobacco	10.2	10.7	38.3
Media & printing	32.4	14.6	59.9
Chemical industries	23.8	18.0	51.5
Metal products	15.5	10.1	47.4
Machinery and equipment	17.7	9.3	54.5
Electronics	38.9	23.9	59.2
Transport equipment	42.2	11.3	59.1
Retail	15.1	24.4	34.1
Tourism	15.5	10.3	32.9
Banking and leasing	20.5	19.1	48.4
Insurance and pension funding	19.1	24.5	38.8
Real estate activities	9.4	11.4	37.9
Business services	19.1	11.8	56.4
ICT services	45.7	21.0	60.4
Health and social services	9.7	8.1	27.1
EU-4 total	20.2	14.9	46.6
EU-15	20.0	15.0	47.4

Source: e-Business Watch (2002). Figures employment-weighted (enterprises comprising ...% of employees). Base: all enterprises (N=9264 for EU-15; N=5917 for EU-4). Reporting period: June/July 2002. EU-4 includes D, F, I, UK.

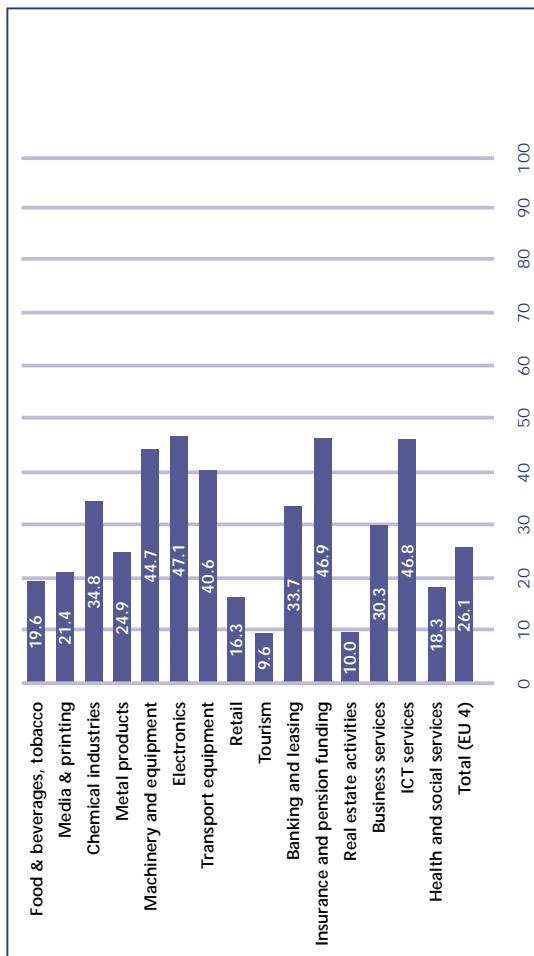
Companies do not use online technologies only for e-commerce purposes (i.e. to accomplish transactions). Online collaboration between business partners (for instance for designing products or to forecast product demand) and the exchange of documents with suppliers and customers can also be important functions enabled by e-business. In some of the manufacturing sectors, more than 30% of employees already work in companies that practise collaborative design through online networks.

Companies collaborating with business partners for designing products by size-class and region:

Size-class (EU-15)*	Country**	
0-49 empl.	Germany	16.7
50-249 empl.	France	20.6
250+ empl.	Italy	19.8
	UK	25.2

\* figures weighted by number of enterprises  
\*\* figures weighted by employment

Indicator 15: Usage of online technologies to track working hours and production time



Source: e-Business Watch (2002). Figures employment-weighted (enterprises comprising ...% of employees). Base: all enterprises (N=9264 for EU-15; N=5917 for EU-4). Reporting period: June/July 2002. EU-4 includes D, F, I, UK.

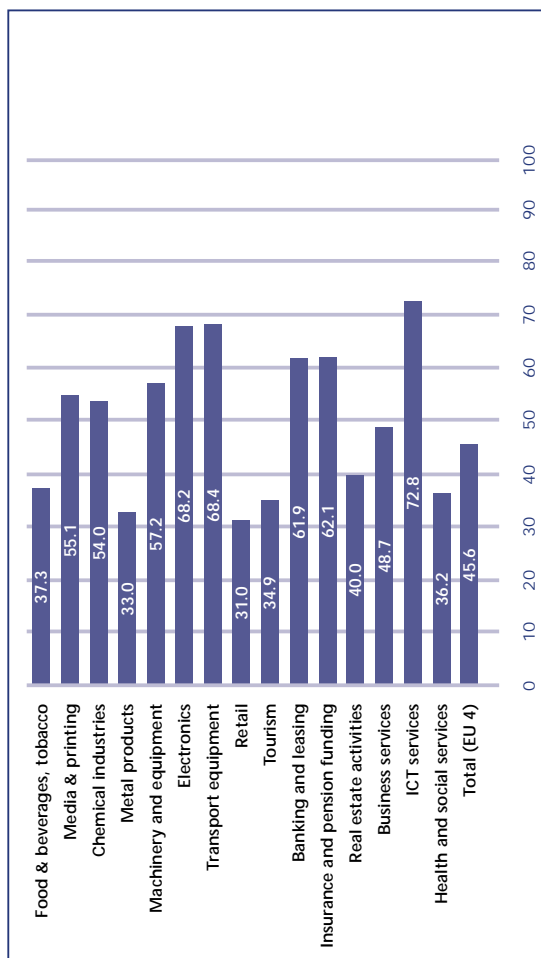
About 26% of employees work in companies that use online technologies to track working hours and production times. This is one example of how information technology and networks can be used to support internal business processes, in this case to facilitate controlling. Large enterprises are more likely to implement IT supported solutions, as efficiency gains are on average more promising than for smaller enterprises.

Companies using online technologies to track working hours and production time

Size-class (EU-15)*	Country**	
0-49 empl.	Germany	33.1
50-249 empl.	France	19.1
250+ empl.	Italy	18.6
	UK	25.8

\* figures weighted by number of enterprises  
\*\* figures weighted by employment

Indicator 16: Usage of online technologies to share documents/ for collaborative work



Source: e-Business W@tch (2002). Figures employment-weighted (enterprises comprising ...% of employees). Base: all enterprises (N=9264 for EU-15 N=5917 for EU-4). Reporting period: June/July 2002. EU-4 includes D, F, I, UK.

Sharing documents to perform collaborative work has become quite common among enterprises except for the smallest ones. 46% of employees work in companies where this function is enabled. The diffusion of IT solutions for other, more specific internal applications is less advanced, as the following examples show: Companies accounting for 23% of employment use online technologies to support the human resources management, 12% to automate the travel reimbursement of employees and 19% for e-learning.

Companies using online technologies to share documents for collaborative work:

Size-class (EU-15)*	Country**	Percentage
0-49 empl.	Germany	43.2
50-249 empl.	France	45.2
250+ empl.	Italy	37.6
	UK	54.4

\* figures weighted by number of enterprises  
\*\* figures weighted by employment

Indicator 17: Barriers to selling online (companies completely agreeing with statement)

EU-4 by sector	Customers hesitant to buy online	Goods/services do not lend themselves to selling online	Technology is too expensive	Delivery process causes problems	Adapting corporate culture to e-commerce is difficult
Food & beverages, tobacco	24.6	58.2	18.1	18.1	26.4
Media & printing	29.1	51.6	22.5	10.9	21.8
Chemical industries	20.0	44.7	14.9	13.3	22.5
Metal products	28.7	57.0	25.1	12.8	29.7
Machinery and equipment	25.2	57.9	28.6	13.3	25.7
Electronics	22.1	45.2	18.1	8.2	25.6
Transport equipment	28.1	75.3	10.9	17.2	22.5
Retail	27.3	34.5	25.6	18.3	24.9
Tourism	28.4	38.9	26.4	10.3	20.7
Banking and leasing	26.3	36.5	23.8	18.6	30.4
Insurance and pension funding	33.0	36.9	15.7	11.1	17.5
Real estate activities	30.1	58.0	20.7	12.3	20.8
Business services	27.7	59.0	18.0	12.4	22.8
ICT services	26.6	47.1	13.0	14.2	13.8
Health and social services	28.8	60.3	22.0	10.5	24.9
EU-4 total	27.1	50.2	21.1	13.8	23.7

Source: e-Business W@tch (2002). Figures employment-weighted (enterprises comprising ...% of employees fully agreeing with statement). Base: all enterprises (N=9264 for EU-15 N=5917 for EU-4). Reporting period: June/July 2002. EU-4 includes D, F, I, UK.

Why not use online sales channels? The main reason companies give is that they simply consider their goods or services do not lend themselves to selling online (47% of businesses "agree completely", and - remarkably - even a higher percentage of medium-sized and large enterprises). Demand side aspects (consumers hesitant to buy online, revenue still low) are generally considered as more important barriers than potential obstacles related to the technical and logistical implementation of processes.

Companies agreeing completely that "adapting the corporate culture to e-commerce is difficult":

Size-class (EU-15)*	Country**	Percentage
0-49 empl.	Germany	20.7
50-249 empl.	France	30.2
250+ empl.	Italy	28.6
	UK	20.1

\* figures weighted by number of enterprises  
\*\* figures weighted by employment

Indicator 18: Barriers to procuring online

EU-4 by sector	Requires face-to-face interaction	Suppliers do not sell online	Concerns about data protection and security	Technology is expensive	Cost advantage is insignificant
Food & beverages, tobacco	45.6	42.2	25.4	21.5	22.4
Media & printing	35.8	29.9	30.0	20.2	20.9
Chemical industries	44.9	36.2	21.9	21.5	10.5
Metal products	44.5	44.0	25.0	28.7	21.5
Machinery and equipment	41.0	37.7	23.2	27.7	16.6
Electronics	33.9	33.3	30.6	21.1	19.3
Transport equipment	34.7	39.1	29.4	10.0	23.4
Retail	35.9	34.0	33.7	28.7	26.5
Tourism	30.2	32.1	29.1	27.2	19.8
Banking and leasing	40.9	29.3	29.6	23.3	13.5
Insurance and pension funding	33.1	26.1	28.4	7.8	18.8
Real estate activities	34.7	34.8	36.0	28.0	21.2
Business services	32.0	27.8	28.5	16.5	20.8
ICT services	28.7	18.7	24.5	19.9	13.0
Health and social services	35.3	25.5	37.3	26.4	23.1
<b>EU-4 total</b>	<b>35.9</b>	<b>31.8</b>	<b>29.9</b>	<b>23.2</b>	<b>20.7</b>
EU-15	35.7	31.9	30.7	23.1	20.3

Source: e-Business Watch (2002). Figures employment-weighted (enterprises comprising ...% of employees fully agreeing with statement). Base: all enterprises (N=9264 for EU-15; N=5917 for EU-4). Reporting period: June/July 2002. EU-4 includes D, F, I, UK.

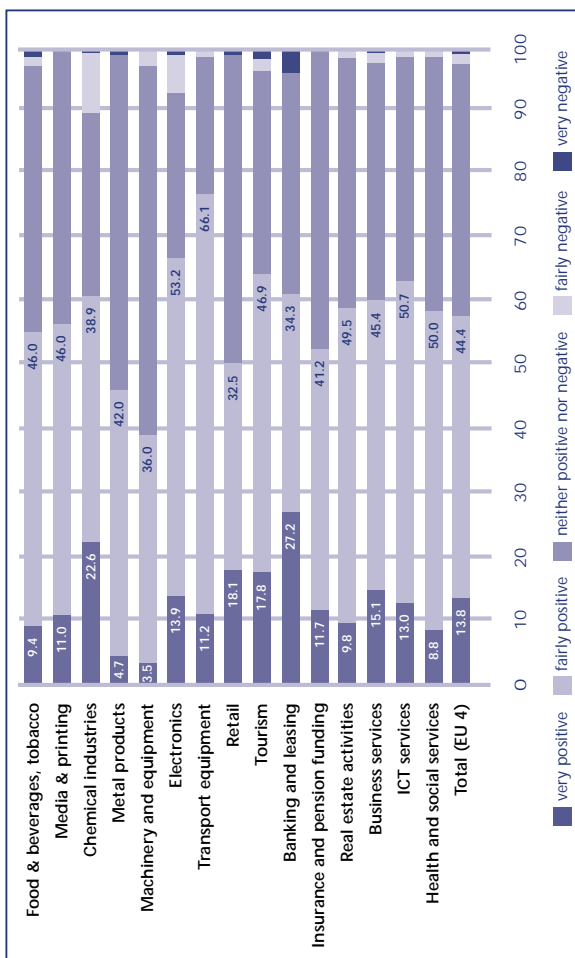
The reasons for non-adoption of e-procurement correspond to those given for not selling online. More than a third of all companies agrees completely that purchasing "requires face-to-face interaction" and more than 30% say that their "suppliers do not sell online". Trust issues (data protection, security issues) also seem to rank high in B2B e-commerce, but the perception varies widely between countries (cf. table).

Companies agreeing completely that they are "concerned about data protection and security issues":

Size-class (EU-15)*	Country**
0-49 empl.	Germany 17.5
50-249 empl.	France 34.5
250+ empl.	Italy 32.4
	UK 43.0

\* figures weighted by number of enterprises  
 \*\* figures weighted by employment

Indicator 19: Impact of e-procurement on procurement costs



Source: e-Business Watch (2002). Figures employment-weighted (enterprises comprising ...% of employees). Base: companies procuring online (N=2387 for EU-4). Reporting period: June/July 2002. EU-4 includes D, F, I, UK.

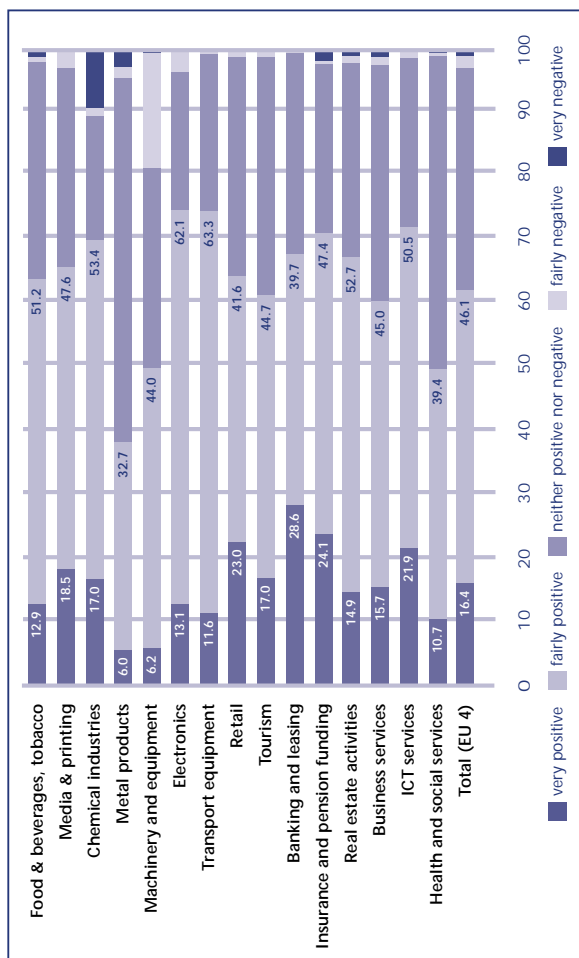
The main driver to implement e-procurement mechanisms is to reduce costs. This can be achieved in two ways: by reducing costs of the goods / services purchased and by reducing (internal) processing costs for procurement processes. 58% of those companies which use e-procurement have experienced a positive impact on their procurement costs, albeit only 13% a "very positive" one. While there are only marginal differences between sectors in that respect, large enterprises currently seem to benefit slightly more from e-procurement than SMEs.

Companies reporting very positive impacts of e-procurement on procurement costs:

Size-class (EU-15)*	Country**
0-49 empl.	Germany 10.4
50-249 empl.	France 5.4
250+ empl.	Italy 19.0
	UK 20.3

\* figures weighted by number of enterprises  
 \*\* figures weighted by employment

Indicator 20: Impact of procuring online on internal business processes



Source: e-Business Watch (2002). Figures employment-weighted (enterprises comprising ...% of employees). Base: companies procuring online (N=2387 for EU-4). Reporting period: June/July 2002. EU-4 includes D, F, I, UK.

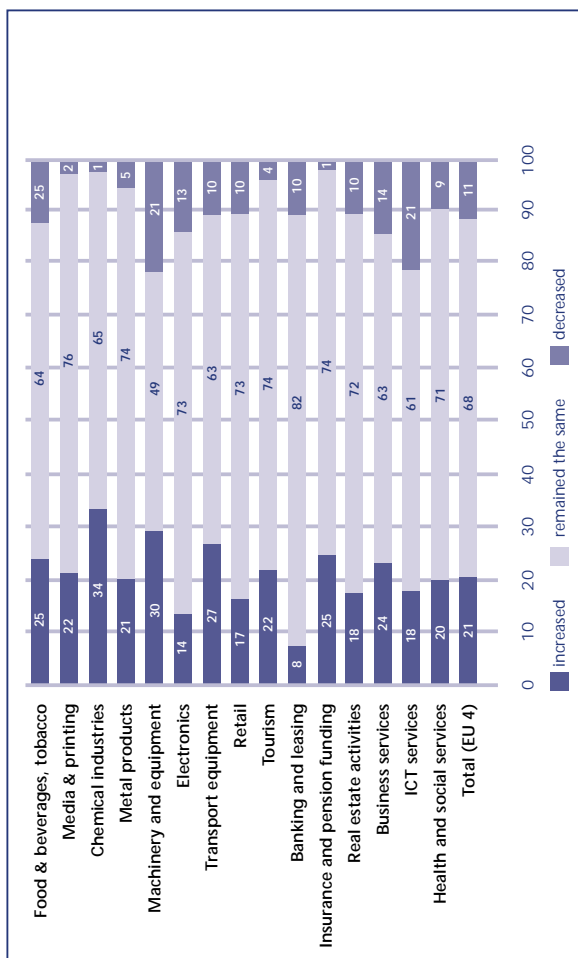
The main impact of e-procurement – according to the perception of enterprises that make online purchases themselves – is on the efficiency of internal business processes. About 60% of enterprises – in some sectors even 75% – report (fairly or very) positive effects. Large enterprises are slightly more satisfied (70% "fairly/very positive"), but medium-sized (60%) and even small enterprises (55%) are not too different in their perception of impacts. Regional differences are stronger if only the "very" positive impacts are looked at.

Companies reporting very positive impacts of e-procurement on internal business processes:

Size-class (EU-15)*	Country**
0-49 empl.	14.6 Germany
50-249 empl.	11.5 France
250+ empl.	19.0 Italy
	19.2 UK

Base: companies procuring online  
\* figures weighted by number of enterprises  
\*\* figures weighted by employment

Indicator 21: Impact of procuring online on number of suppliers



Source: e-Business Watch (2002). Figures employment-weighted (enterprises comprising ...% of employees). Base: companies procuring online (N=2387 for EU-4). Reporting period: June/July 2002. EU-4 includes D, F, I, UK.

There is some controversy as to whether e-procurement will lead to concentration as several international players have announced strategies to drastically decrease the number of their suppliers through using marketplaces for e-procurement. Survey results do not immediately support this evidence. Companies accounting for more than 20% of employees say that e-procurement activities have rather caused the number of their suppliers to increase, while only 10% say the number has decreased. Even among large enterprises, more say that the number has increased.

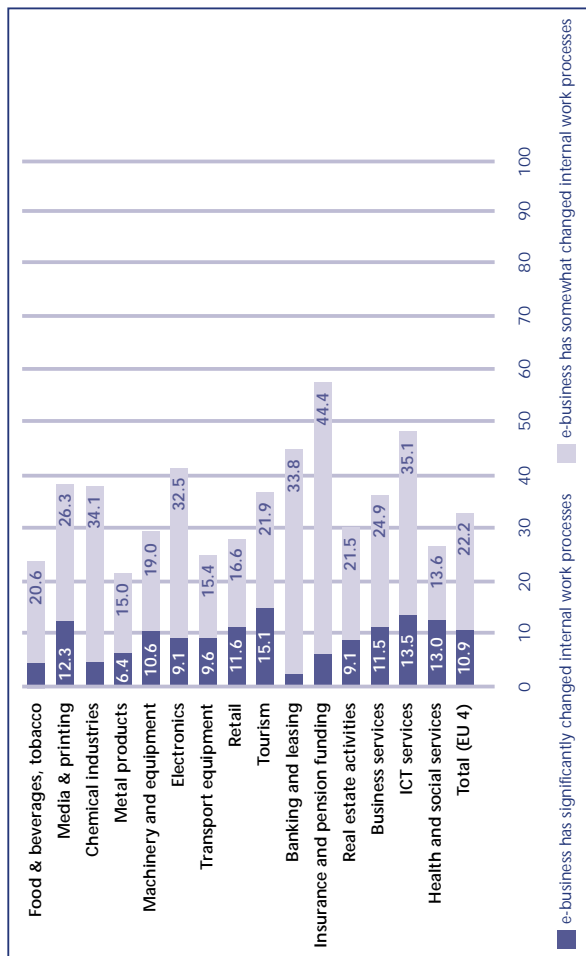
Companies reporting the number of suppliers has decreased through e-procurement:

Size-class (EU-15)*	Country**
0-49 empl.	5.2 Germany
50-249 empl.	7.4 France
250+ empl.	16.3 Italy
	10.9 UK

Base: companies procuring online  
\* figures weighted by number of enterprises  
\*\* figures weighted by employment



Indicator 22: Impact of e-business activities on internal work processes



Source: e-Business Watch (2002). Figures employment-weighted (enterprises comprising ...% of employees). Base: all enterprises (N=5917 for EU-4). Reporting period: June/July 2002. EU-4 includes D, F, I, UK.

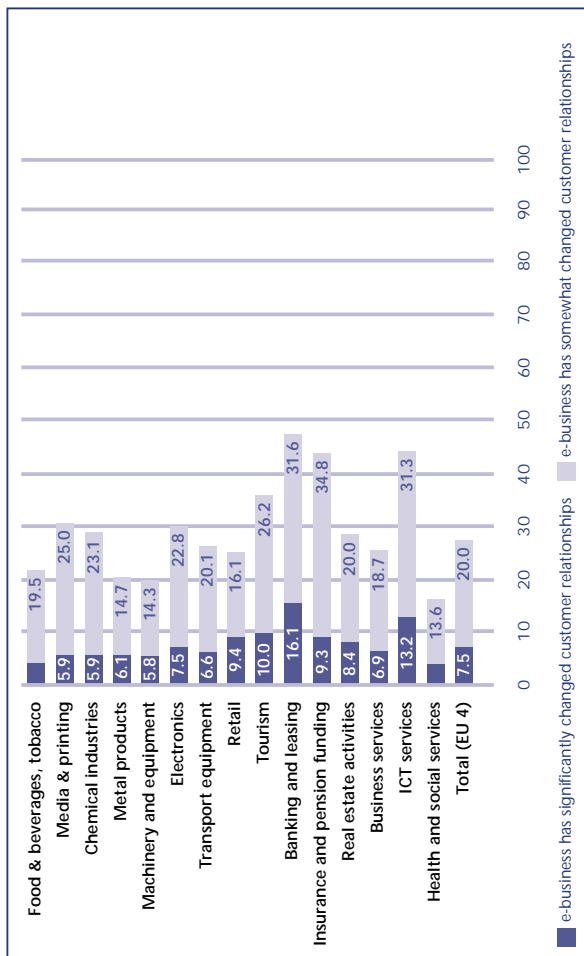
Internal work processes is the area where the highest percentage of companies currently observes an impact of electronic business. Enterprises accounting for 11% of employment report "significant changes", and a further 22% that e-business has "somewhat" changed internal work processes. While large enterprises expectedly report the highest impact, SMEs are not lagging too far behind. That indicates that – on different levels – electronic business will bring about changes for all types of companies, across sectors, size classes and regions.

Companies reporting that e-business activities have significantly or somewhat changed internal work processes:

Size-class (EU-15)*	Country**
0-49 empl.	Germany 38.8
50-249 empl.	France 19.2
250+ empl.	Italy 28.5
	UK 38.1

\* figures weighted by number of enterprises  
\*\* figures weighted by employment

Indicator 23: Impact of e-business activities on relationship to customers



Source: e-Business Watch (2002). Figures employment-weighted (enterprises comprising ...% of employees). Base: all enterprises (N=5917 for EU-4). Reporting period: June/July 2002. EU-4 includes D, F, I, UK.

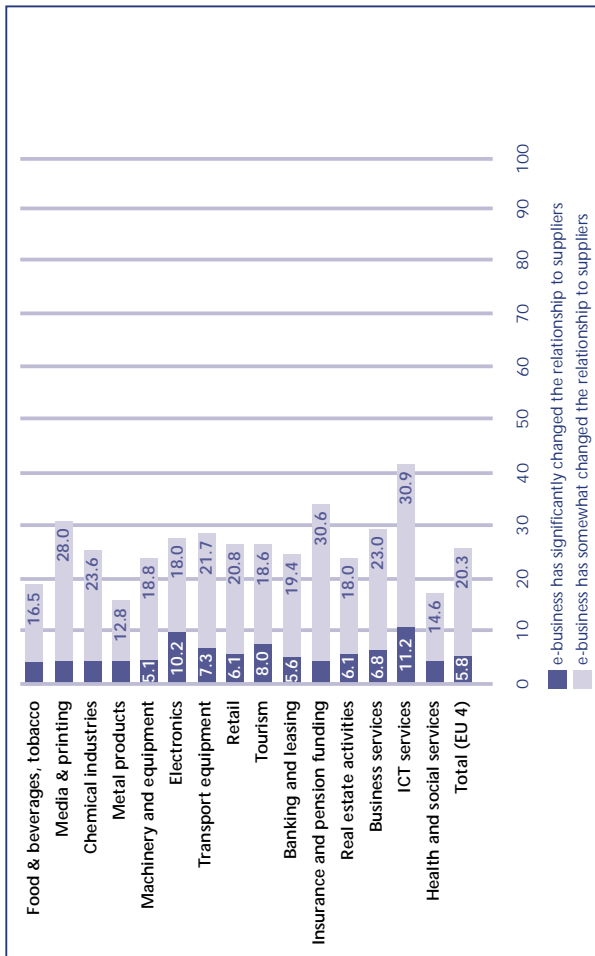
Electronic business is about to significantly impact on companies' relationships to customers. Although e-commerce transactions, especially in the business-to-consumer area, have not deployed as fast as expected (12% of companies sell online), about a quarter of all enterprises feels that e-business has already somewhat or significantly changed the way they interact with their customers. The financial and ICT services sectors are outstanding in that respect, observing the highest impact.

Companies reporting that e-business activities have significantly or somewhat changed the relationship to customers:

Size-class (EU-15)*	Country**
0-49 empl.	Germany 26.8
50-249 empl.	France 22.3
250+ empl.	Italy 31.6
	UK 30.0

\* figures weighted by number of enterprises  
\*\* figures weighted by employment

Indicator 24: Impact of e-business activities on relationship to suppliers



Source: e-Business Watch (2002). Figures employment-weighted (enterprises comprising ...% of employees). Base: all enterprises (N=5917 for EU-4). Reporting period: June/July 2002. EU-4 includes D, F, I, UK.

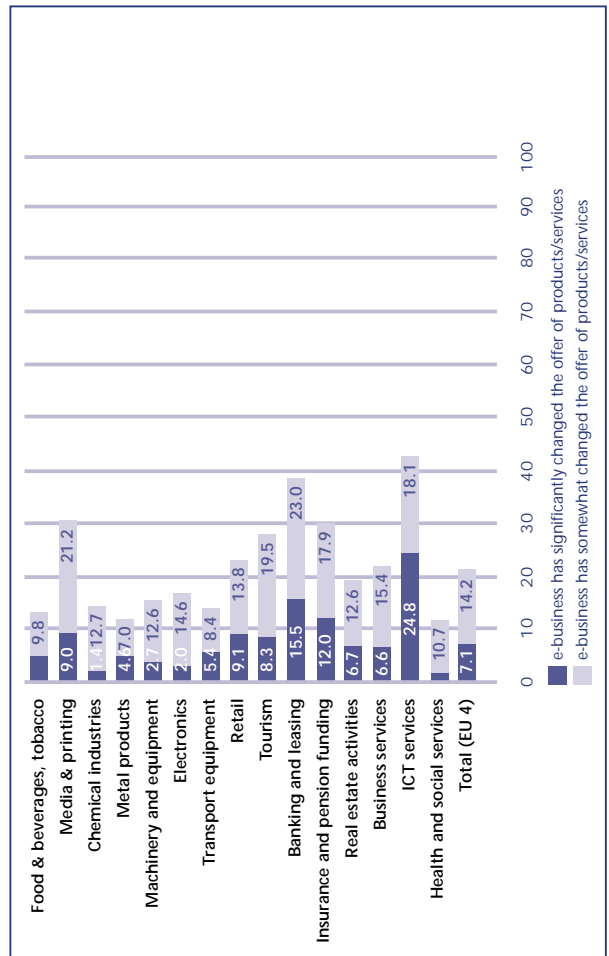
Companies assess the impact of electronic business activities on the relationships to their suppliers as similar to the one on customer relationship. On average, about a quarter of all companies say that the relationship to suppliers has somewhat or significantly changed, with only a few saying "significantly". This again suggests that the main impact of e-business (and also e-procurement) is about integrating business processes internally rather than fundamentally changing buyer-seller relationships.

Companies reporting that e-business activities have significantly or somewhat changed the relationship to suppliers:

Size-class (EU-15)*	Country**	
0-49 empl.	26.1	
50-249 empl.	19.6	
250+ empl.	30.1	
	UK	28.5

\* figures weighted by number of enterprises  
\*\* figures weighted by employment

Indicator 25: Impact of e-business activities on offer of products and services



Source: e-Business Watch (2002). Figures employment-weighted (enterprises comprising ...% of employees). Base: all enterprises (N=5917 for EU-4). Reporting period: June/July 2002. EU-4 includes D, F, I, UK.

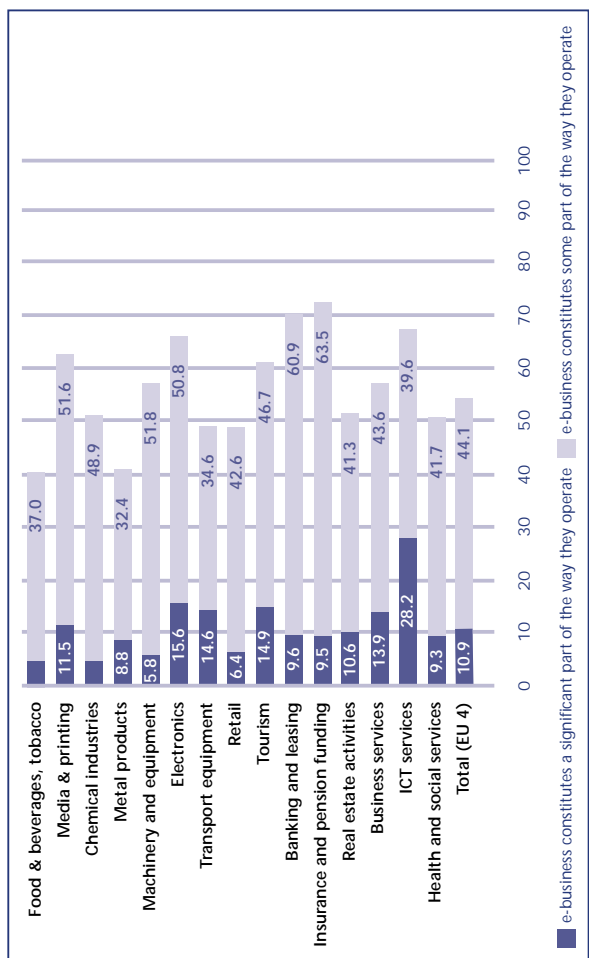
Electronic business is changing the way how goods and services are produced and distributed, but not necessarily the nature of the products themselves – at least not in the same extent. There are notable exceptions in some sectors, though, where e-business clearly has a direct impact on the products themselves, e.g. in financial services, ICT services and in tourism.

Companies reporting that e-business activities have significantly or somewhat changed their offer of products and services:

Size-class (EU-15)*	Country**	
0-49 empl.	15.9	
50-249 empl.	19.4	
250+ empl.	26.7	
	UK	27.3

\* figures weighted by number of enterprises  
\*\* figures weighted by employment

Indicator 26: Significance of e-business today



Source: e-Business Watch (2002). Figures employment-weighted (enterprises comprising ...% of employees). Base: all enterprises (N=5917 for EU-4). Reporting period: June/July 2002. EU-4 includes D, F, I, UK.

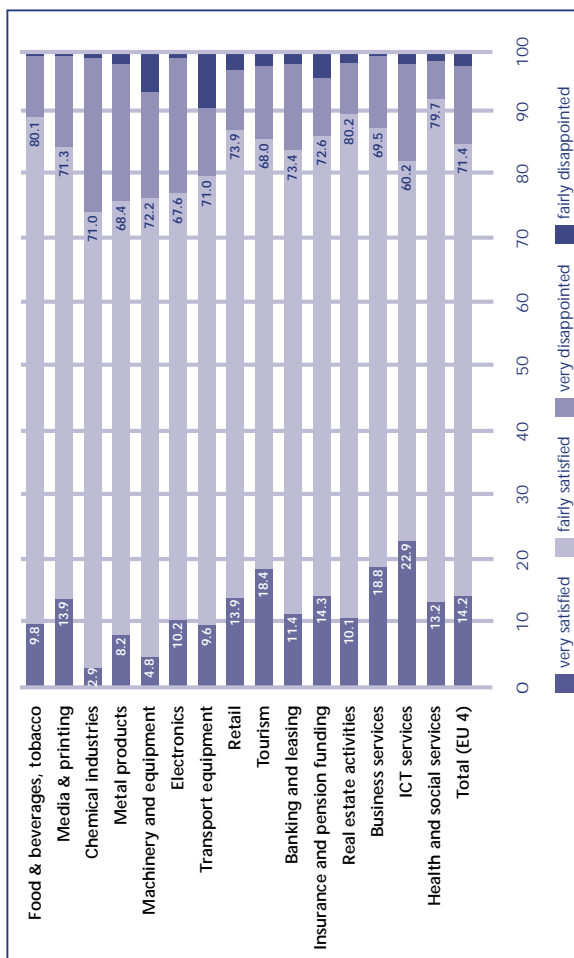
All in all, more than half of all enterprises say that e-business has already at least some significance for the way they operate. About 12% say it constitutes a significant part. Remarkably, small enterprises do not differ from medium-sized and not even much from large enterprises in their perception of the relative importance. Although this "soft indicator" does not reveal all hard facts about real e-business activities, it is a barometer for the general attitude toward and perception of electronic business development.

Companies reporting that e-business constitutes a significant / some part of the way they operate:

Size-class (EU-15)*	Country**
0-49 empl.	Germany 64.7
50-249 empl.	France 36.4
250+ empl.	Italy 43.4
	UK 61.6

\* figures weighted by number of enterprises  
\*\* figures weighted by employment

Indicator 27: Overall satisfaction with effects of e-business activities



Source: e-Business Watch (2002). Figures employment-weighted (enterprises comprising ...% of employees). Base: enterprises practising e-business (N=2845 for EU-4). Reporting period: June/July 2002. EU-4 includes D, F, I, UK.

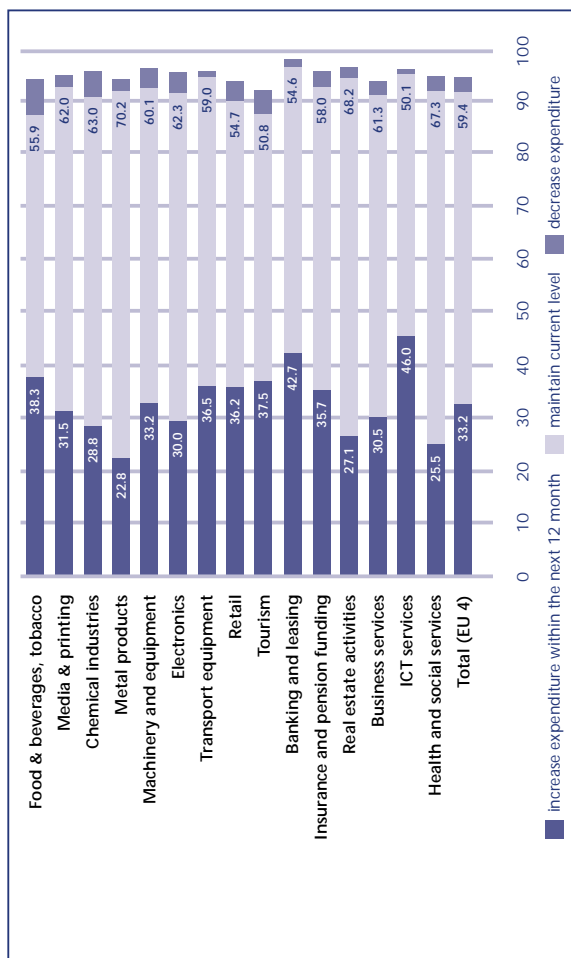
Companies are on the whole satisfied, if unenthusiastic, with the results of their e-business activities hitherto. In total, 14% of enterprises say they are "very satisfied" and 74% report they are "fairly satisfied", which leaves about 12% of "disappointed" enterprises. The share of companies openly admitting that they are disappointed with the effects of e-business so far is notably higher among large enterprises (19%).

Some disappointment: companies saying they are very / fairly disappointed with their e-business activities:

Size-class (EU-15)*	Country**
0-49 empl.	Germany 18.6
50-249 empl.	France 12.6
250+ empl.	Italy 19.7
	UK 7.0

\* figures weighted by number of enterprises  
\*\* figures weighted by employment

Indicator 28: Plans for e-business expenditures



Source: e-Business Watch (2002). Figures employment-weighted (enterprises comprising ...% of employees). Base: all enterprises (N=5917 for EU-4). Reporting period: June/July 2002. EU-4 includes D, F, I, UK.

The intentions of companies concerning their expenditures on e-business related technologies are more promising than the general climate for IT spending in 2002 would suggest. A third of all enterprises say they plan to increase expenditures and only a very few say they will decrease investments. Even if this statement of intention should not be emphasized, as it does not say anything about real spending, it indicates that the forecast and overall attitude towards IT and e-business is probably not as dire as the recent downward trend in IT spending would suggest.

Companies planning to increase their e-business expenditure in the next 12 months:

Size-class (EU-15)*	Country**
0-49 empl.	Germany 24.0
50-249 empl.	France 31.1
250+ empl.	Italy 44.8
	UK 41.3

\* figures weighted by number of enterprises  
 \*\* figures weighted by employment

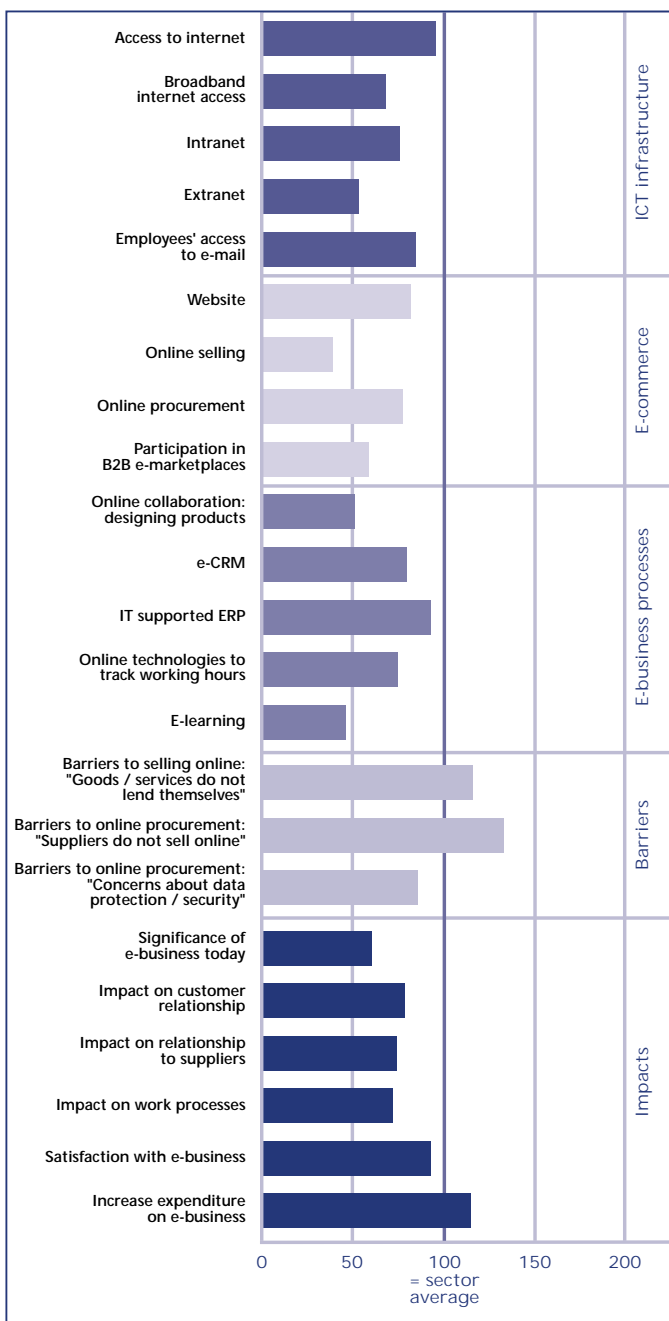
The following scoreboards show the e-business profiles of 15 sectors of the economy.<sup>1</sup> Based on 23 indicators, their performance is benchmarked to the industry average (= 100). The objective of these charts is not to demonstrate which sectors perform "better" or "worse", but rather to make visible at a glance the differences between sectors with respect to the relative importance of various e-business application areas.

Area	No.	Indicator	Definition
ICT infra-structure	1	Access to internet	Percentage of employees working in enterprises with internet access
	2	Broadband internet access	Enterprises connected to the internet by DSL or other fixed connection (as a share of enterprises connected, employment-weighted)
	3	Intranet	Percentage of employees working in enterprises with an intranet
	4	Extranet	Percentage of employees working in enterprises with an extranet
	5	Employees' access to e-mail	Percentage of employees working in enterprises where the majority of office workers has access to e-mail for external communication
E-commerce	6	Website	Percentage of employees working in enterprises which have a website
	7	Online selling	Percentage of employees working in enterprises which sell online
	8	Online procurement	Percentage of employees working in enterprises which sell online
	9	Participation in B2B e-marketplaces	Percentage of employees working in enterprises which trade on Business-to-Business electronic marketplaces
E-business processes	10	Online collaboration: designing products	Percentage of employees working in enterprises using online technologies for collaboration in designing products/services
	11	e-CRM	Percentage of employees working in enterprises which use an (electronic) customer-relationship-management solution
	12	IT supported ERP	Percentage of employees working in enterprises which use an IT supported enterprise-resource-planning solution
	13	Online technologies to track working hours	Percentage of employees working in enterprises which use online technologies to track working hours and/or production time
	14	E-learning	Percentage of employees working in enterprises which use online e-learning applications

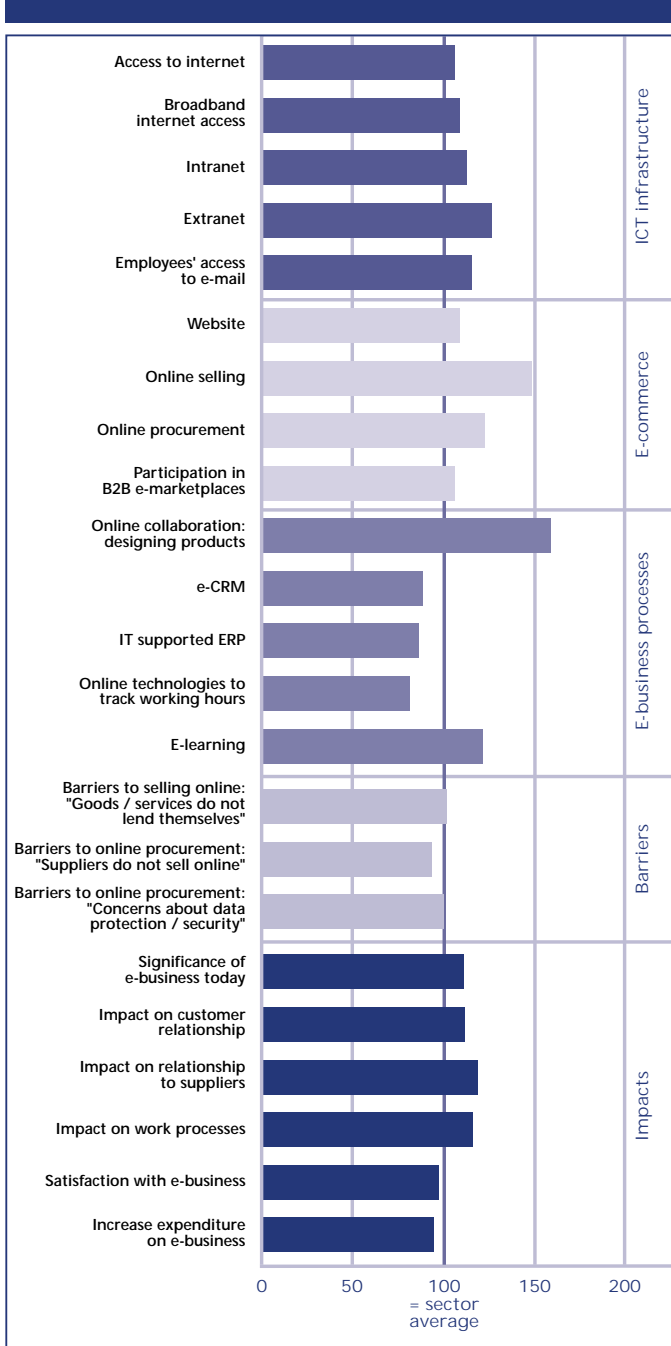
<sup>1</sup> For a definition of the sectors, see chapter "methodological note"

Barriers	15	Barriers to selling online: "Goods / services do not lend themselves"	Percentage of employees working in enterprises which agree completely with the statement: "Many of the goods / services we produce do not lend themselves to be sold online."
	16	Barriers to online procurement: "Suppliers do not sell online"	Percentage of employees working in enterprises which agree completely with the statement: "Most of our suppliers do not sell online."
	17	Barriers to online procurement: "Concerns about data protection / security"	Percentage of employees working in enterprises which agree completely with the statement: "We are concerned about data protection and security issues."
Impact	18	Significance of e-business today	Index based on the percentages of employees working in enterprises which say that e-business constitutes a "significant part" or "some part" of the way they operate. Weighted computation of both values.
	19	Impact on customer relationship	Percentage of employees working in enterprises which say that e-business has significantly or somewhat changed their customer relationship.
	20	Impact on relationship to suppliers	Percentage of employees working in enterprises which say that e-business has significantly or somewhat changed the relationship to their suppliers.
	21	Impact on work processes	Percentage of employees working in enterprises which say that e-business has significantly or somewhat changed internal work processes
	22	Satisfaction with e-business	Index based on the percentages of employees working in enterprises which are "very" or "fairly" satisfied with their e-business activities. Weighted computation of both values.
	23	Increase expenditure on e-business	Percentage of employees working in enterprises which plan to increase their expenditure on e-business technologies within the next 12 months.

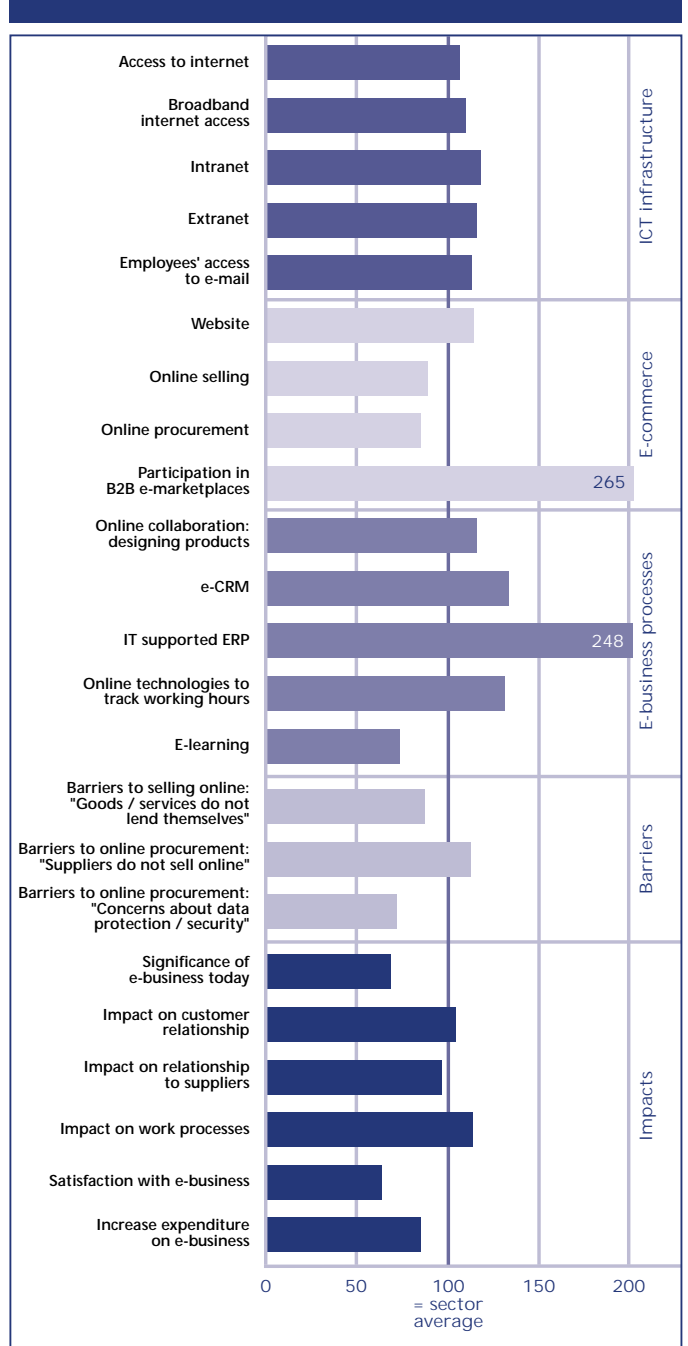
Food, beverages and tobacco



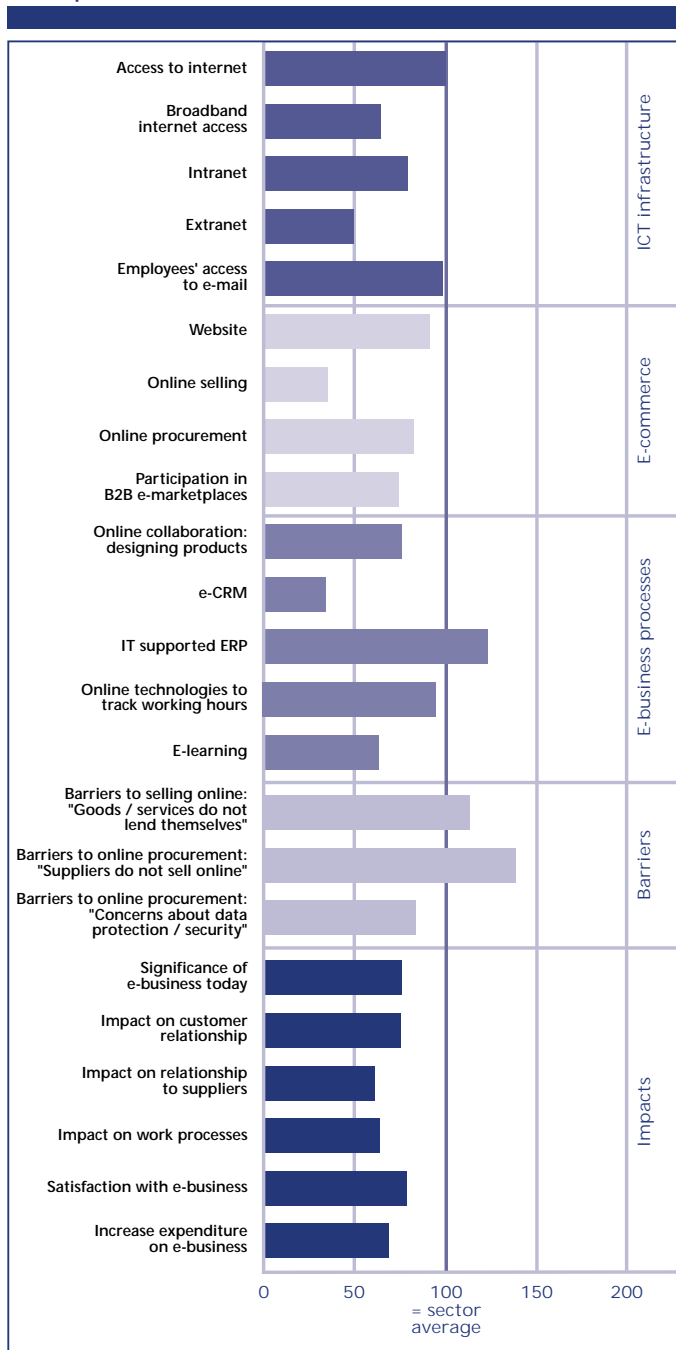
Media & printing



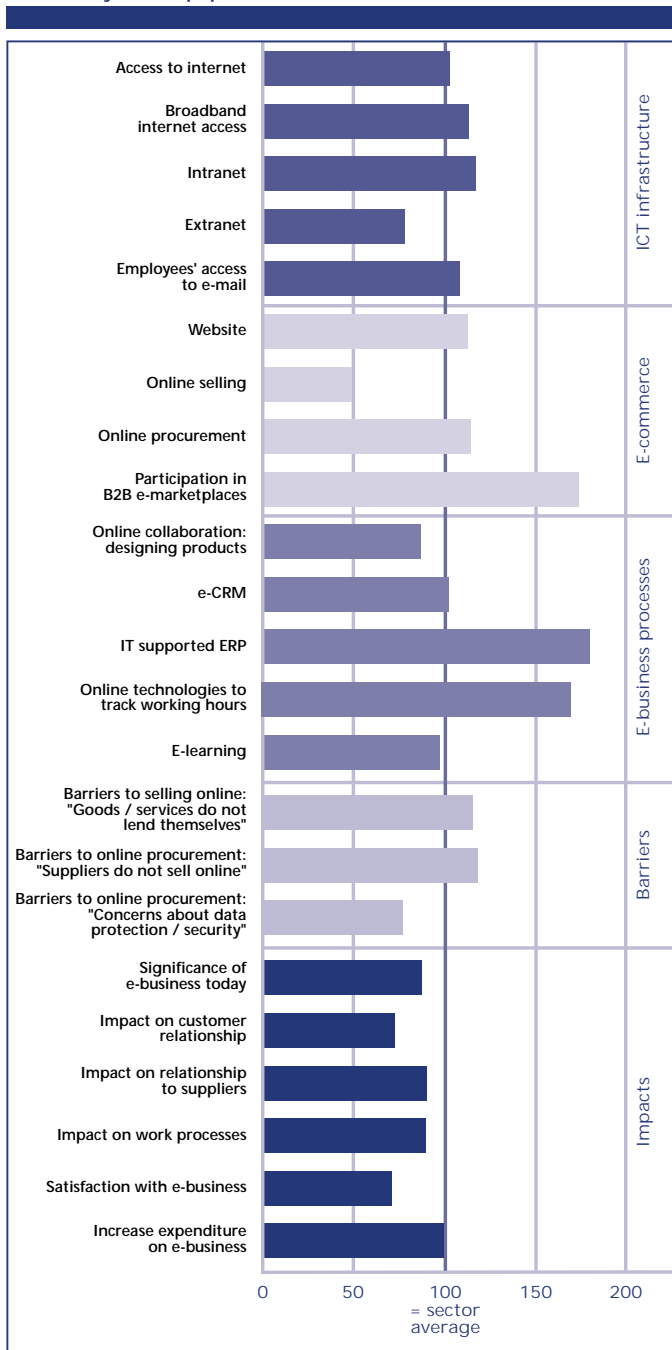
Chemical industries



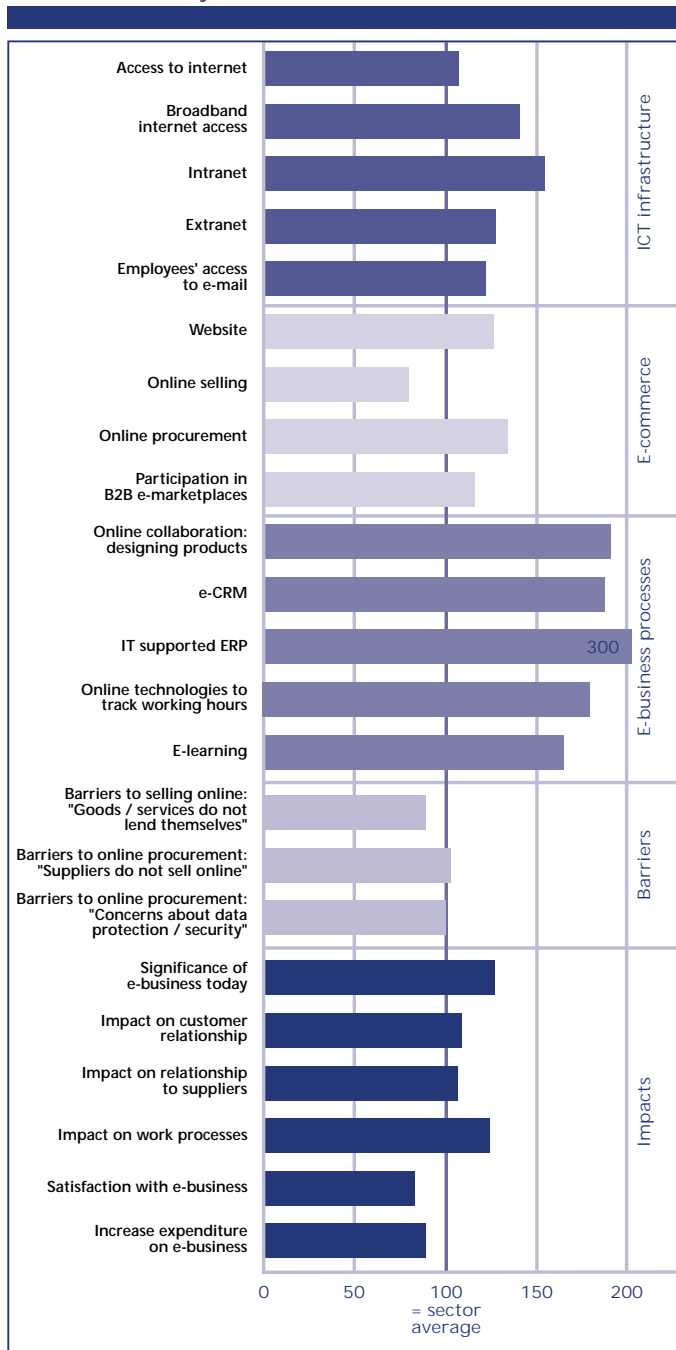
Metal products



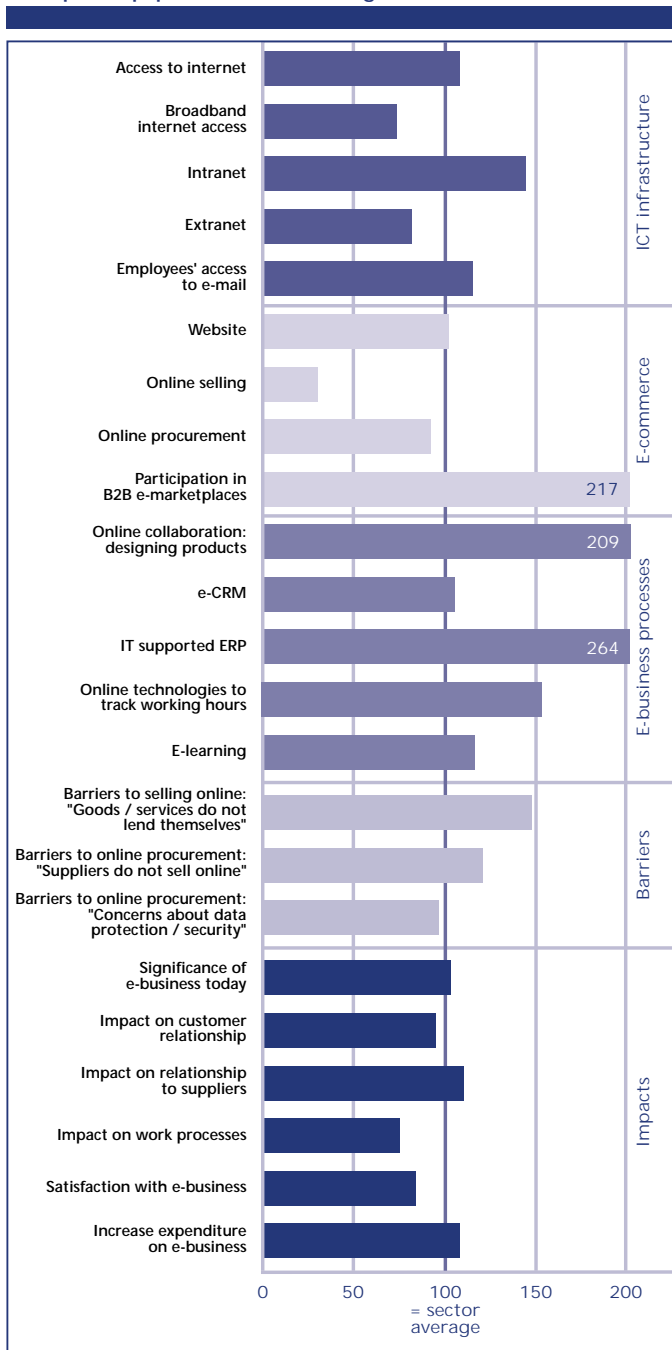
Machinery and equipment



Electrical machinery and electronics

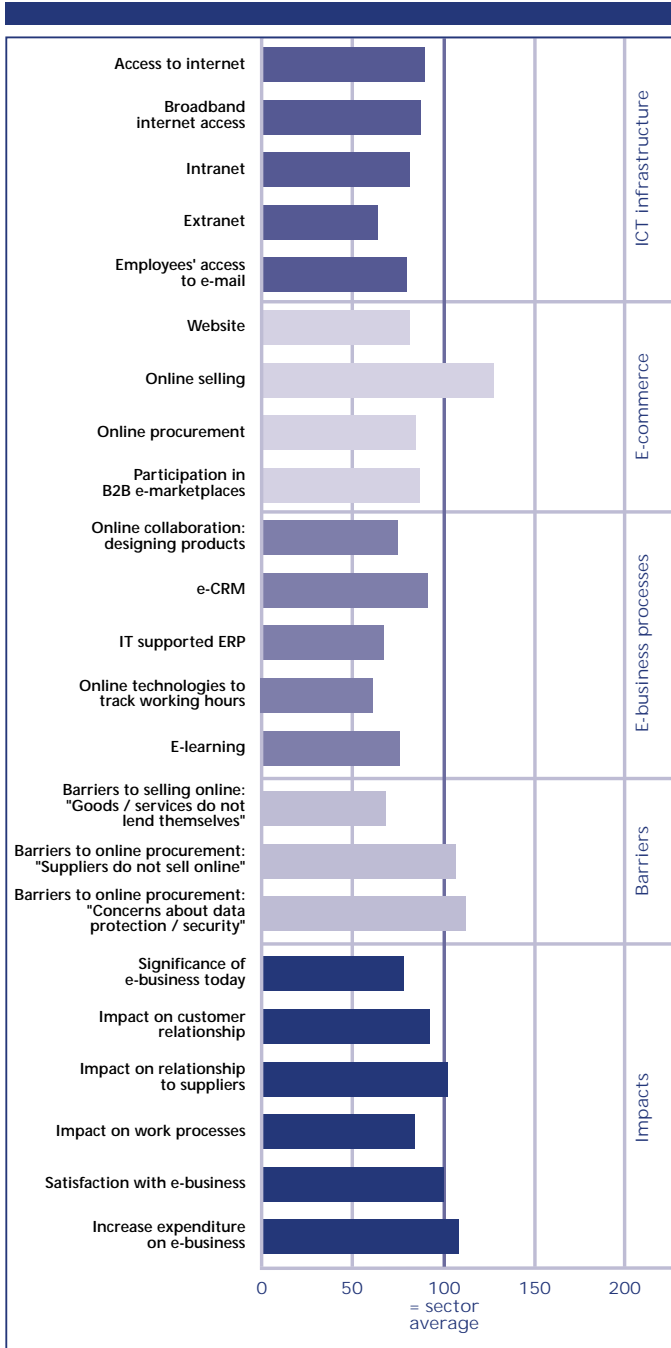


Transport equipment manufacturing

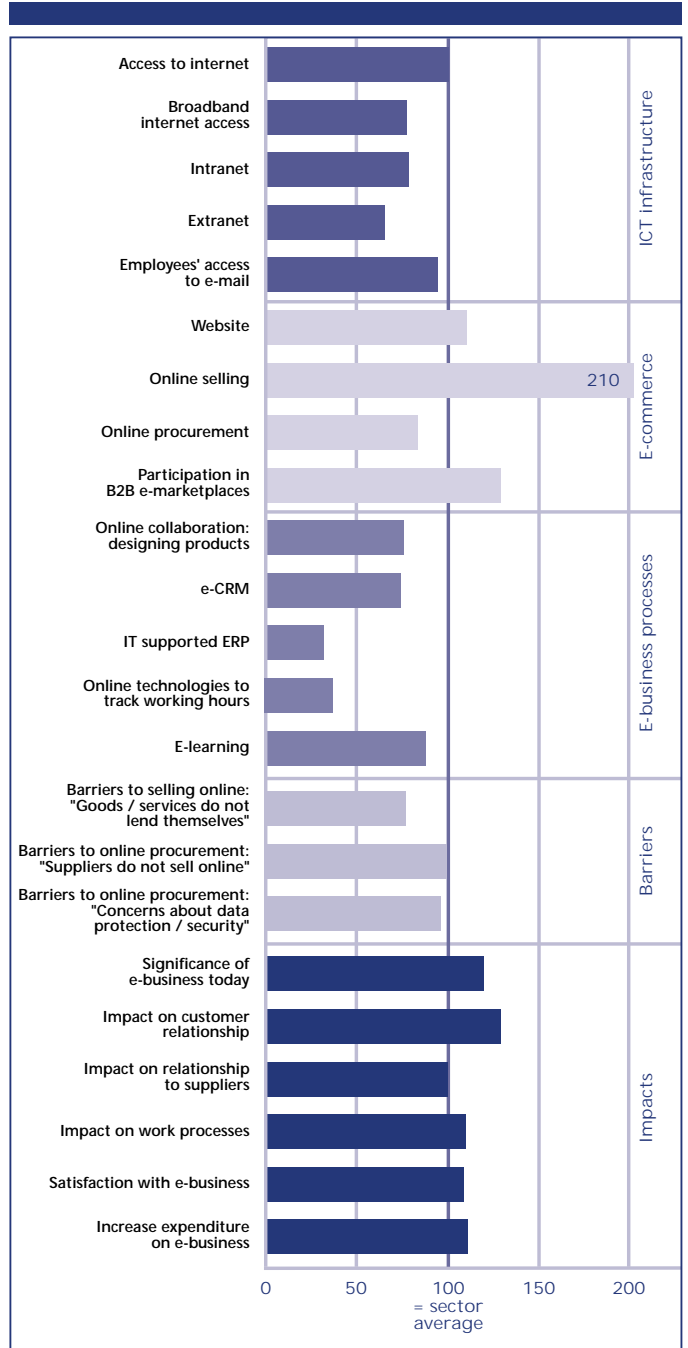




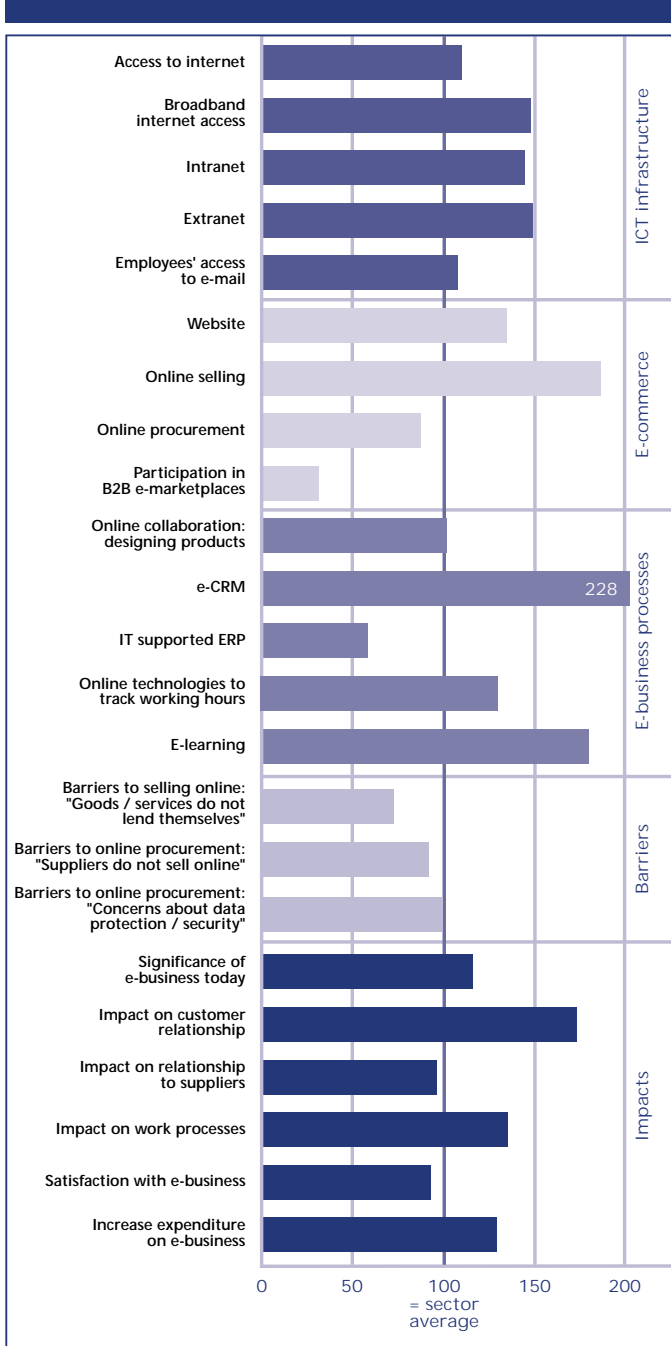
Retail



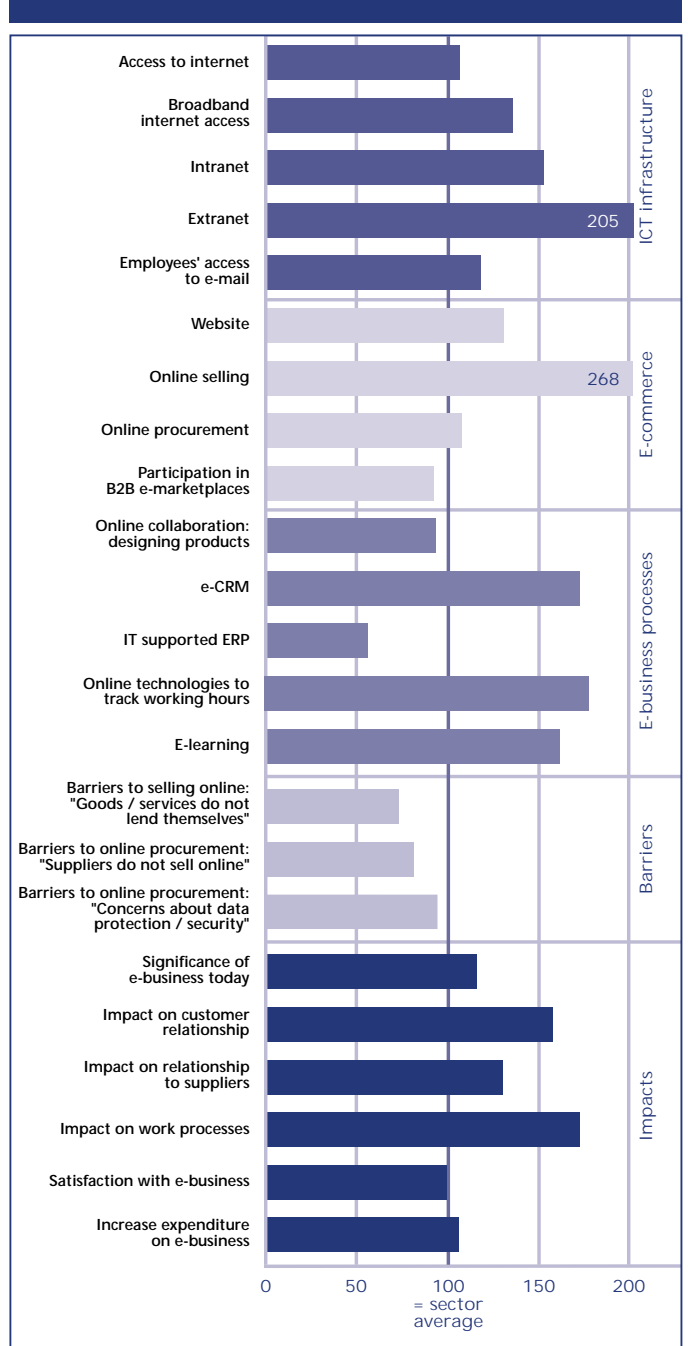
Tourism



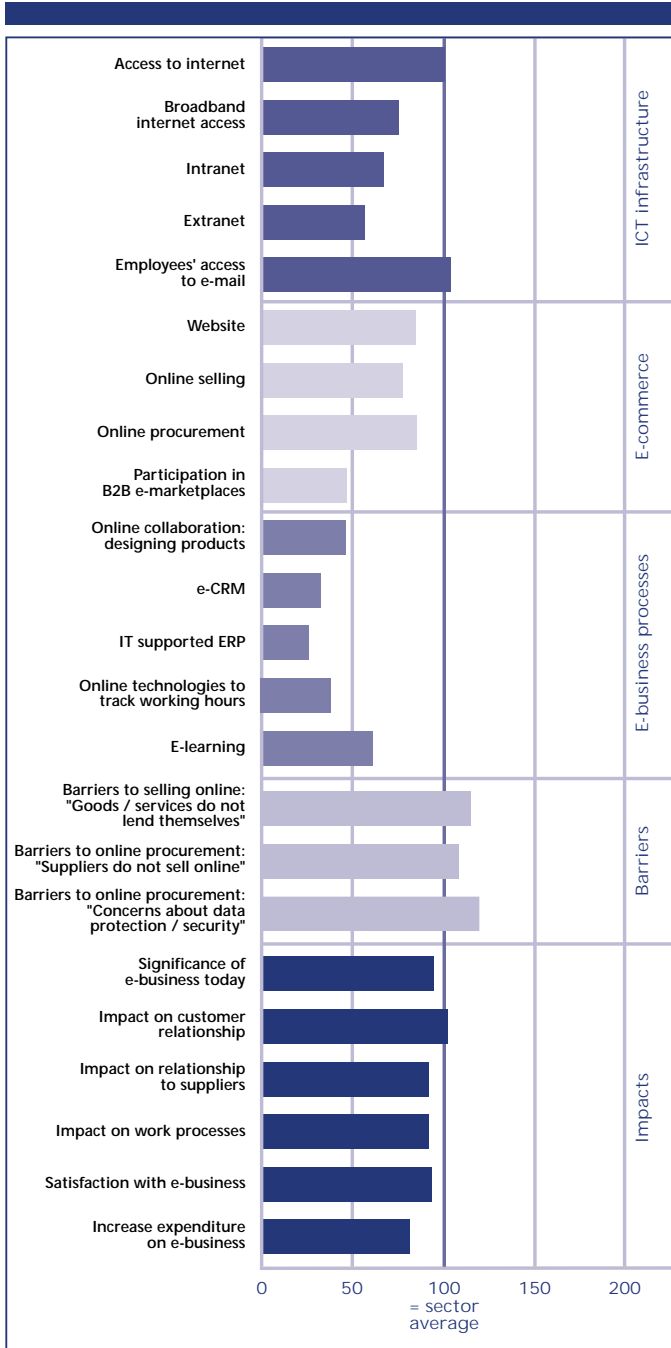
Banking & leasing



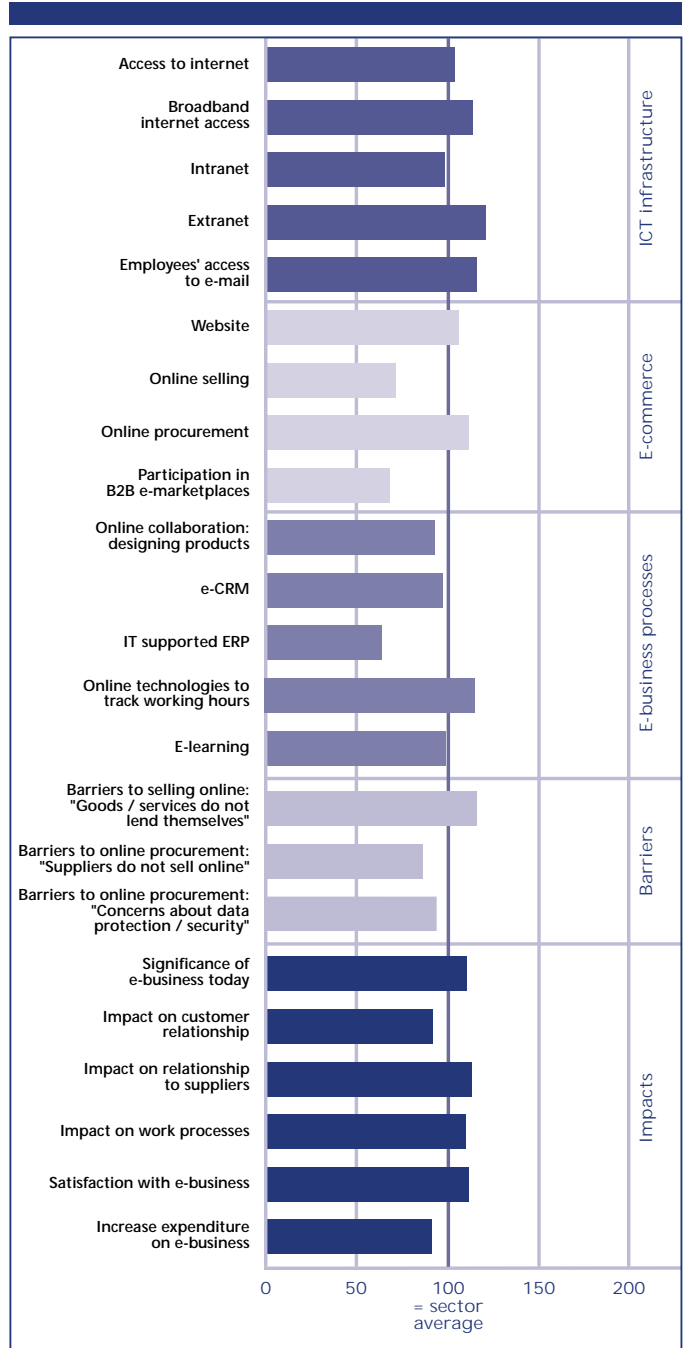
Insurance & pension funding



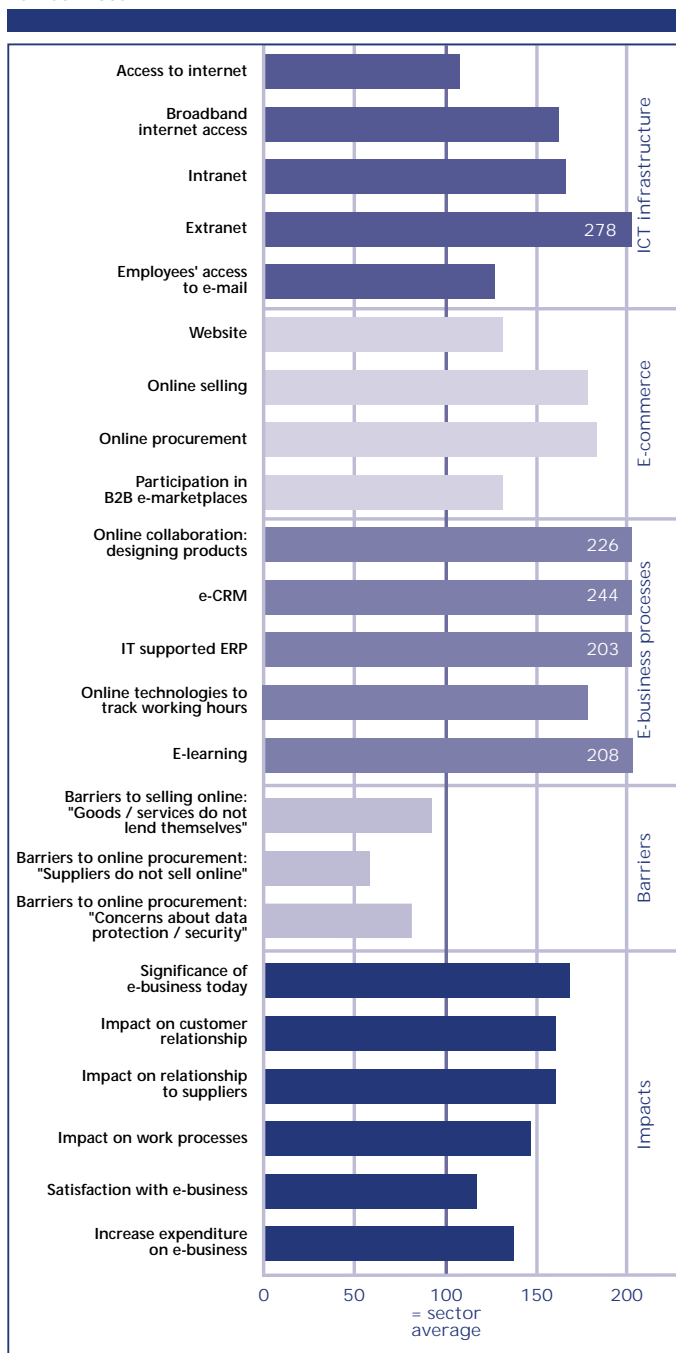
Real estate activities



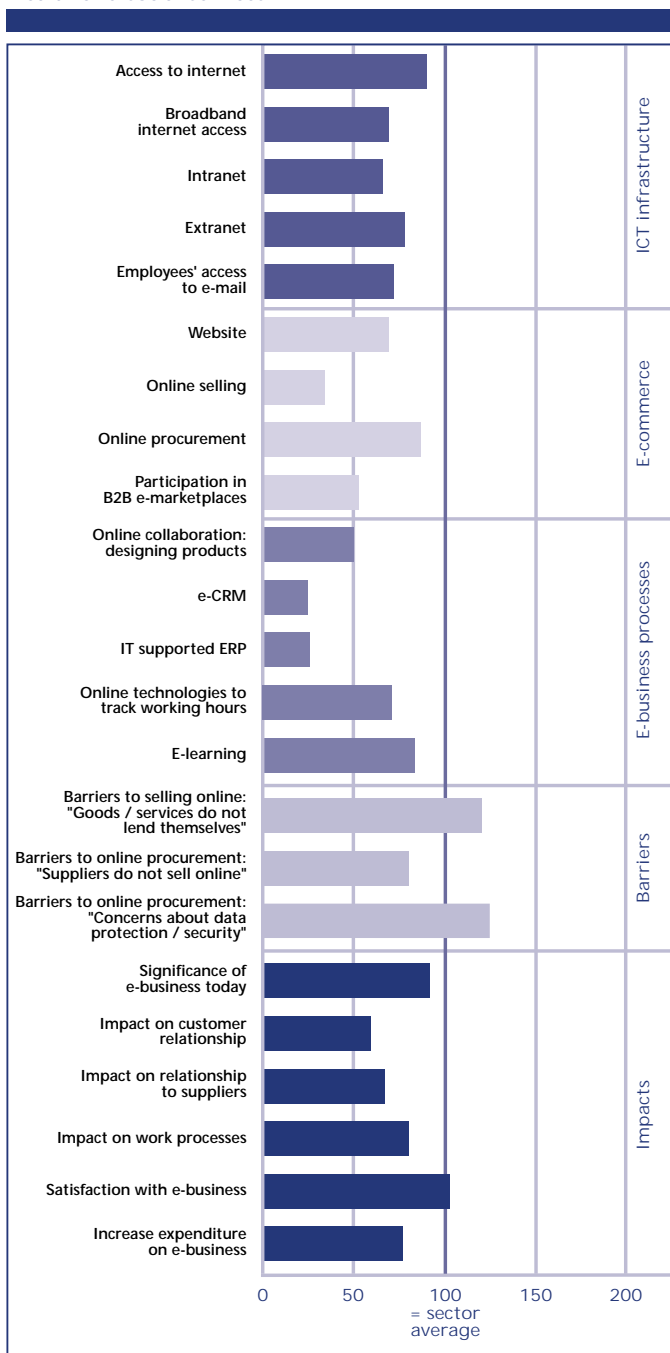
Business services



ICT services



Health and social services



### Background

The data presented in this Pocket Book of e-business indicators is derived from the European e-Business Survey 2002, a cornerstone of the monitoring activities of the e-Business W@tch. In total, 9,264 telephone interviews with decision-makers in European enterprises in all EU Member States were conducted during June and July 2002. For the construction of the questionnaire and for underlying definitions, OECD recommendations were taken into account. The field work of the survey was carried out by INRA Germany in co-operation with its partner organisations on behalf of the e-Business W@tch.

### Interview method

The fieldwork was carried out in June and July 2002 using computer-aided telephone interview (CATI) technology. The decision-maker in the enterprise targeted by the survey was normally the person responsible for ICT within the company, typically the IT manager. Alternatively, especially in small enterprises without a separate IT unit, the managing director or owner was interviewed.

### Population coverage and sampling

The highest level of the population for the e-Business Survey was the set of all enterprises which are active at the national territory of one of the EU Member States and which have their primary business activity in one of the 15 sectors specified by NACE Rev. 1 codes. The most important viewpoints used for breakdown of the population in the survey were (i) the economic activity, (ii) the national territory of the enterprise and (iii) the size in terms of employees. The survey was carried out as an enterprise survey, i.e. data collection and reporting focuses on the enterprise (rather than on the establishment), defined as a business organisation of one or more establishments comprised as one legal unit.

The sample included enterprises from 15 sectors of the economy, defined by NACE Rev. 1 business activities. The composition of sectors took into account their economic importance, homogeneity with respect to the analysis of e-business, and the relevance of e-business activities.

The sample drawn was a random sample of companies from the respective sector population in each Member State where the respective sector was to be surveyed with the objective of fulfilling quota with respect to company size class. Target quota were to include a share of at least 10% of large companies (250+ employees) per country-sector cell and at least 30% of medium-sized enterprises (50-249 employees). Samples were drawn locally by the INRA partner organisations based on standard business directories and databases. In total, 9,264 interviews were carried out.

Table: Population coverage of the e-Business Survey (2002)

No.	NACE Rev. 1 Codes (Section – Division/Group)		Sector Name
01	D	15, 16	Manufacture of food products, beverages and tobacco
02	D/O	22, 92.1, 92.2	Publishing, printing, reproduction of recorded media, audiovisual services
03	D	24,25	Manufacture of chemicals and chemical products
04	D	28	Manufacture of metal products
05	D	29 (except 29.6, 29.7)	Manufacture of machinery and equipment
06	D	30, 31(except 31.3 - 31.6), 32	Manufacture of Electrical machinery and electronics
07	D	34, 35	Manufacture of transport equipment
08	G	52.11, 52.12, 52.4	Retail
09	H/I/O	55.1, 55.2, 62.1, 53.3, 92.33, 92.52, 92.53	Tourism
10	J	65.12, 65.2	Credit institutions, investment firms and leasing enterprises
11	J	66	Insurance and pension funding services
12	K	70	Real estate activities
13	K	74	Business services
14	I/K	64.2, 72	Telecommunications and computerrelated services
15	N	85.11, 85.12, 85.3	Health and social services

Table: Average interview length

Country	No. of interviews	Average length	Country	No. of interviews	Average length
A	308	17.0 min	I	1517	22.5 min
B	300	18.2 min	LUX	102	17.4 min
DK	304	20.2 min	NL	500	17.2 min
D	1500	18.8 min	P	300	23.0 min
FIN	308	20.5 min	E	502	18.4 min
F	1362	17.2 min	S	260	19.8 min
EL	308	16.5 min	UK	1538	16.5 min
IRL	155	20.1 min	TOT.	9264	~ 18 min

### Problems encountered

No major problems were reported by the fieldwork organisations with respect to interviewing (e.g. comprehensibility of the questionnaire, logical structure). If problems were mentioned, they stemmed from the difficulties of conducting research projects among ICT decision-makers in general rather than from any specific issues in this project. Dedicated ICT professionals are heavily researched and therefore securing their participation can be difficult, particularly in larger companies. In some countries, it was not possible to accomplish the number of interviews envisaged, mainly in those cases where the total population of enterprises was relatively small. In some cases, the objective of including a share of 10% of large companies could not be accomplished; if possible, these were then replaced by interviews with SMEs.

### Breakdown of data

Within the coverage specified above, and in line with the special task of the e-Business W@tch, results were compiled for mainly two sets of data:

1. An activity breakdown of the population of enterprises into 15 sectors. This breakdown is based on the aggregate of four countries (D, F, I, UK), as in these countries all 15 sectors were included in the survey and therefore comparability of the sample is given. These four countries represent more than 60% of the market volume in any of the 15 sectors and in most sectors actually more than 70%.

2. A size-class breakdown of the population of enterprises into three categories: small enterprises (including micro-enterprises, i.e. enterprises with 0-49 employees), medium-sized enterprises (50-249 employees) and large enterprises (250+ employees). A breakdown of the population by EU Member States is also available, but it is restricted to four countries (D, F, I, UK) for the same reason as explained in (1.) above. This implies that two different kinds of totals were calculated: (i) an EU-4 total consisting of the results from Germany, France, Italy and the UK and (ii) a sector total consisting of all countries included in the survey of a particular sector. For reasons of comparability and consistency, the tables in this Pocket Book build on the EU-4 totals. Sector totals are composed of 6-8 countries per sector (cf. databases on [http://www.empirica.com/marketwatch/database/sector\\_database.htm](http://www.empirica.com/marketwatch/database/sector_database.htm)).

In addition, the activity breakdown was cross-tabulated with the country as well as with the size-class breakdown. These cross-tabulations are offered in special sector databases. However, depending on the indicator and the filter questions, the number of observations can become very small in many cells of this cross-tabulation. It is therefore recommended to limit the breakdown of data to one dimension (in the case of pre-filtered questions) or two dimensions (if all enterprises were asked).

### Weighting principles

Two weighting schemes have been applied: weighting by employment and by the number of enterprises. Data are presented in either way depending on the kind of the analysis to be made.

- Values that are reported as employment-weighted figures should be read as "enterprises comprising x% of employees". To give an example: The indicator "percentage of companies selling online" is – if employment-weighted – defined as "companies comprising x% of employees sell online". The reason for using employment-weighting is that there are very many more micro enterprises than non-micro enterprises. The unweighted figure would effectively represent mainly the smallest sizes of firms.

- Values that are reported as enterprise-weighted figures are to be read as "x% of enterprises", reflecting the number of enterprises as legal entities but not their relative economic importance in terms of employment.

Weighting was based on the latest available universal figures by Eurostat. Missing or undisclosed universe data had to be imputed. The imputation procedures depended on auxiliary or proxy data availability, taking into account where available information about higher industry aggregations, nearest neighbour data, turnover-employment correlation and secondary sources other than Eurostat and allowing for the constraint of predetermined ranges such that imputed data had to be contingent with published sectoral, national and European universe totals as well as for final plausibility checks for every single imputed data item. The weighting cells correspond to the data reporting pattern used as regards industries and employment size-classes.

Uniform expansion factors are applied to enterprises within one of the three size-classes per industry per country. As for data that refer to a base other than the universe of all enterprises (e.g. indicators appropriately reported for on-line selling enterprises only), expansion factors are adjusted to the different shares of observations per cell that build the computation base.