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INFORMATION TECHNOLOGY IN ENTERPRISES AND HOUSEHOLDS 2005

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Imprint

Published by:
Statistisches Bundesamt (Federal Statistical Office), Presse office, Wiesbaden

The report „Information Technology in Enterprises and Households 2005“ was prepared by Ulrich Greiner, Dr. Wolfgang Hauschild, Dr. Susanne Schnorr-Bäcker, Dr. Irene Kahle und Ulrike Timm with the support of other staff members of Divisions I A, I B, III C and VII C of the Federal Statistical Office.

Specific information on this publication can be obtained directly from the Federal Statistical Office:

Should you have any questions on ICT usage in private households, please contact:
Division I B „Institute for Research and Development in Federal Statistics“
Tel.: +49 (0) 18 88 / 6 44 – 2099
Fax: +49 (0) 18 88 / 6 44 – 3950
e-mail: irene.kahle@destatis.de

Should you have any questions on macroeconomic aspects of ICT, please contact:
Division III C „Input-Output Accounts, National Wealth Accounts“
Tel.: +49 (0) 18 88 / 6 44 – 2582
Fax: +49 (0) 18 88 / 6 44 – 3952
e-mail: ulrich.greiner@destatis.de

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Tel.: +49 (0) 18 88 / 6 44 – 8561
Fax: +49 (0) 18 88 / 6 44 – 8990
e-mail: wolfgang.hauschild@destatis.de

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Federal Statistical Office
65180 Wiesbaden
- Tel.: +49 (0) 611 / 75-34 44
- Fax: +49 (0) 611 / 75-39 76
- e-mail: presse@destatis.de

Order no.: 0000121-05700-1e

Published in February 2006

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Information Technology in Enterprises and Households 2005

1. Abstract

The macroeconomic significance of information and communication technologies (ICT) in Germany is portrayed in this brochure for the first time on the basis of the national accounts. The 2005 European pilot surveys on usage of information and communication technologies (ICT) in enterprises and private households, which have been implemented since 2002 in almost all Member States of EU, then form the second and third foci. Selected results of these surveys are presented relating to the current year under report 2005, as well as in a European comparison. Unless otherwise stated, the results refer in each case to the first quarter of the year.

What is the significance of ICT for the German economy?

- According to the results of the national accounts, the share of ICT total output was 4.5% in 2004. The share of ICT output in total gross value added was 4.4% in the same year.

- ICT accounted for a share of 2.9% of total consumption. The corresponding amount of about Euro 50 billion (at current prices) is comparable with the expenditure of private households on clothing, at Euro 56 billion. ICT products played a relatively substantial role in gross fixed capital formation in 2004, accounting for a 12%-share in total gross fixed capital formation. However their amount, at Euro 47 billion, did not reach the level of consumption.

- Exports of ICT have more than doubled since 1995, reaching almost Euro 99 billion in 2004. This could be compared for the first time since 1995 to comparably lower imports in the same year. ICT was therefore able to record a foreign trade surplus of about Euro 3.5 billion.

- The share of ICT in gross domestic product was 6.8% in 2004. The corresponding amount of about Euro 150 billion is composed of the final use of ICT products (total of the components of consumption, gross fixed capital formation and exports), minus ICT-specific imports.

How is Germany positioned regarding ICT in a European comparison?

- With 94% of enterprises (with at least ten employees) and 62% of private households having an Internet connection, Germany was above the average of the European Union (EU-15) in 2005, at 92% and 53% respectively, but below online shares in Scandinavian countries. A satiation limit has hence been indicated among enterprises since 2003.

- Broadband access is experiencing dynamic growth all over Europe: The share among all private households in the EU-15 countries rose from 2004 to 2005 from 17% to 25%, and from 18% to 23% in Germany. Considering all enterprises, the share of broadband usage in the EU-15 increased from 55% in 2004 to 65% in 2005. Of all German enterprises, 62% were equipped with a broadband connection in 2005 (2004: 54%).

- Shopping via the Internet increased faster than average among the population aged between 16 and 74 years of age in Germany: The share almost doubled from 17% in 2002, to reach 32% in 2005; in the EU-15, the share increased in the same period by only about half (from 13% to 20%). 54% of all enterprises in Germany used the Internet for shopping, accounting for 15 percentage points more than in the EU-15.

How and for what are ICT used in German enterprises?

- 84% of all German enterprises used computers in their business operations in 2005; 78% had an Internet connection and 59% had their own website. The level of ICT equipment in enterprises therefore no longer increased in comparison to 2004. It is nevertheless still clear that usage of ICT differs widely between enterprise sizes and sectors of industry.

- Most enterprises with an Internet connection still use ISDN to access the Internet (44%), but far fewer than in 2004 (– 7 percentage points). Many enterprises are increasingly replacing modem and ISDN with broadband connections such as DSL. 44% of enterprises had a broadband connection in 2005; this accounts for 8 percentage points more than in 2004.

- 74% of enterprises with an Internet connection made use of online banking services in 2005; 38% accessed online services of the administration. It is still the case that relatively little use is made of the Internet for training and instruction: Only 20% of enterprises with an Internet connection used E-Learning in 2005.

- 43% of all enterprises used the Internet for E-Commerce in 2004; this is 3 percentage points more than in the previous year. All in all, 41% of enterprises made purchases on the Internet (2003: 37%). Of these enterprises, 56% paid for their Internet shopping directly online (2003: 48%). 10% of all enterprises sold their goods or services via the Internet in 2004; of these, 22% used specific Internet marketplaces. However, the Internet as a sales channel still plays a minor role for enterprises in Germany. Of the total turnover made by all enterprises in 2004, only 2.7% were accounted for by Internet sales (2003: 2.4%).

How frequently and for what does the population use PCs and the Internet?

- Only 12% of all private households with a monthly net income of Euro 3600 and more did not have an Internet connection at home, but this was the case of 63% of all private households with a monthly income of less than Euro 1300.

- An increase can be observed in private individuals' Internet usage: 61% of the population from an age of ten upwards went onto the Internet in the first quarter of 2005; in 2002 it was only 46%. Internet usage is strongly age-dependent: 89% of 10- to 24-year-olds were online, but only 14% of the over-64s.

- 89% of all Internet users have already used a search engine, 70% have already sent e-mails with enclosures. Only 11% of computer users have written a computer program, however.

- 46% of Internet users bought or ordered something on the Internet in the first quarter of 2005. The focus here was on printed matter (40% of Internet buyers ordered this on the web) and clothing (34%).

Where is more information available?

Further results, as well as volumes of tables and the survey questionnaires, are available (in German) on the website of the Federal Statistical Office (http://www.destatis.de) on the "Informationsgesellschaft" page.

2. Focus on information technologies

Modern information and communication technologies (ICT) have caused absolutely revolutionary changes in all areas of the economy and society in the past decade, changes which have extended beyond geographical and political boundaries.

Rapid spread of ICT; roughly 10 billion websites

The impact of the rapid spread and permeation of ICT, particularly net-based services such as the World Wide Web, in all areas of society, the economy, science and politics, is comparable to the invention of printing. Within ten years, the number of web sites has grown from 100,000 (1995) to today's figure of ten billion. Private Internet surfers today surf the net roughly 650 times as fast as in 1995. Whereas in 1995 Internet users paid roughly Euro 5 for an hour online, now they can use the Internet for the same amount for a flat-rate fee covering a whole month.

Digital information has become a major economic factor, as well as an element of everyday life. Whilst information technology above all was used in the beginning for rationalisation and automation, it was not until personal computers were introduced that a large number of people were able to access these new network-based applications. It can be observed that the technologies of information processing, telecommunication, software and entertainment electronics, information services and media have been increasingly merging since the mid-nineties – the start of world-wide deregulation in the network area. Digital networks increasingly typify and shape relationships between manufacturers and users, between suppliers and customers, between citizens and the State.

The broad spread and usage of ICT in the private and public sphere has become a major factor of innovation and competitiveness within society. Accordingly, the permeation of ICT is a major catalyst for macroeconomic growth and employment, particularly in countries which are poor in resources, or in economic areas such as the European Union (EU).

Comprehensive statistical picture of ICT in Germany now available

Official statistics carry out intensive observations of ICT-relevant developments, and identify corresponding statistical information: Whilst at the beginning these data concentrated on more itemised aspects such as the level of households' equipment with selected ICT appliances, a comprehensive statistical picture of ICT in Germany is now formed. The latest results are combined in this brochure. The introduction describes the economic significance of ICT for the German economy using results from the national accounts. This is followed by a brief overview of ICT-related, topical statistical benchmark figures for economic activities and groups of products. As was the case in 2005, the publication goes on to focus on the latest results regarding equipment, and still more on the uses to which ICT is put in enterprises, as well as in households/private individuals which have been identified for Germany by the Federal Statistical Office since 2002 in the context of EU-wide pilot surveys.

Different delimitations with statistical collection of ICT

Having said that, a wide variety of statistical specifications on ICT are not yet completely compatible. This is largely the result of different concepts and delimitations on which the named statistical surveys and methods are based. When it comes to information on equipment with and usage/application of ICT, significance attaches above all to products such as desktop PCs or laptops, as well as to Internet usage, and to the (network) services needed for this, such as broadband connections (usage-related delimitation).

If one looks by contrast at the significance of ICT for the (macro)economy, the focus is on the production and use of ICT products, including services. To this end, two complementary approaches are suggested: firstly, a products-related and secondly an economic activity-related delimitation.

2.1 Statistical delimitation of ICT

2.1.1 Delimitation of the OECD

To answer questions as to the significance of the production and usage of ICT products with the aid of economic statistics or of the national accounts, we must first of all clarify which products and economic activities belong to ICT.

ICT products and economic activities by OECD definition

The starting point for a statistical collection is the internationally-recognised definition of the OECD. Accordingly, at economic activity level, ICT includes from the sector producing the goods the manufacture of office machinery und computers, insulated wire and cable; television and radio transmitters and apparatus for line telephony and line telegraphy; instruments and appliances for measuring, checking, testing, navigating and other purposes, and industrial process control equipment. From the service sector, wholesale of office machinery and software; renting of office machinery and equipment, including computers; telecommunications as well as data processing and data base activities are defined as being relevant to ICT.

At product level, the ICT definition of the OECD combines a total of 224 types of products to the following five sectors: telecommunications; computers; audio and video; electronic components and other ICT products.

2.1.2 ICT foci in the pilot surveys in households and enterprises

EU pilot surveys focus on aspects of ICT usage

Whilst in the macroeconomic view of ICT the focus is on monetary information on production of the ICT sector and of ICT products, and on the usage of these products by enterprises and end users, the European pilot studies have a more specific perspective with regard to usage of ICT in enterprises and households. In these studies, households, individuals and enterprises are questioned as users as to whether they use ICT and for what purposes. In terms of the market, the surveys are hence restricted to the demand side of ICT products. At the same time, this is not covered in monetary information, but information is separately sought as to which ICT equipment is available and how and for what purpose this is actually used. Here, selected aspects such as PC and Internet usage are targeted. What is more, stronger differentiation is made by enterprise and household characteristics, such as size of enterprise, age or income of the household members, in order to reveal which groups participate in ICT, and which tend to be cut off from the development of ICT.

2.2 ICT 1995 and 2004: Macroeconomic figures

2.2.1 General remarks

Starting point: ICT definition of OECD by products

The starting point of calculations concerning ICT in the national accounts is the OECD's list of ICT products. The calculations and estimations described below refer to ICT products (goods and services), which are contained in the product groups listed in Annex A (Overview 1).

The results are based on estimations, with the help of the set of tools in input-output calculations.

2.2.2 Output of ICT

ICT output: short-lived climax in 2001

The share of ICT in total output in Germany was 3.4% in 1995 (Euro 105.5 billion at current prices). It grew to the highest share yet of 4.9% in 2001, with an absolute amount of Euro 183.8 billion. In 2003, the output of ICT was Euro 170.4 billion, and was thus for instance already higher than the output of machinery and equipment, at Euro 162.6 billion. At Euro 177.6 billion, ICT accounted for a share of 4.5% of total output in Germany in 2004.

Small number of industries typical of ICT

If one takes a look at ICT products from the institutional aspect of industries, it is only the EDP service sector the production of which is 100% accounted for by ICT. Industries with high ICT shares in the entire product range are post and telecommunications, at more than 70%, and the manufacturers of computer equipment, of electronic components and of audio and video equipment, with slightly more than half of their total output. 2% of total software production comes about as an secondary activity in other industries.

2.2.3 Value added by ICT production

The share of ICT output in total output per industry serves as a model basis to ascertain gross value added.

Share of ICT in gross value added rose to 4.4%

Accordingly, the gross value added share of 3.7 % in 1995, which has resulted in the course of the production of ICT goods and ICT services, increased to 4.4% in 2004 (cf. Table 1). The ICT-specific gross value added increased in this period from Euro 61.3 billion to Euro 87.4 billion (at current prices). This is more than 40%.

Those industries had the largest share of the total ICT-specific gross value added which produced ICT services as a primary activity. The corresponding value was just under 70% in both comparative years 1995 and 2004. Another roughly 27% of gross value added arose in the two years in the ICT goods-producing industries. The remainder of about 4% of gross value added came about as an auxiliary activity in non-ICT-specific industries. Hardly anything has changed in the spread of the value added in the goods-producing sector. Things were however different in the service sector, where there has been a pronounced shift of emphasis: At about 42%, telecommunication was clearly ahead of EDP in 1995, the latter accounting for roughly 27%. In 2004, the result of the comparison, with shares of about 34% and about 35% respectively, was rather different.

Table 1:

ICT-specific gross value added by industries

Industries	1995			2004		
	Mill. Euro	% of		Mill. Euro	% of	
		ICT total	Total		ICT total	Total
	Goods-producing ICT sectors					
30 Manufacture of office machinery and computers	2,262	3.7	0.1	2,022	2.3	0.1
31 Manufacture of electrical machinery and apparatus n.e.c.	4,030	6.6	0.2	5,463	6.2	0.3
32 Manufacture of radio, television and communication equipment and apparatus	4,612	7.5	0.3	6,453	7.4	0.3
33 Manufacture of medical, precision and optical instruments, watches and clocks	3,741	6.1	0.2	6,280	7.2	0.3
22, 24, 25, 35 Publishing, printing, manufacture of chemicals, rubber and plastic products, other transport equipment	1,625	2.7	0.1	3,019	3.5	0.2
Subtotal	16,270	26.6	1.0	23,238	26.6	1.2
	Service-providing ICT sectors					
64 Post and telecommunication services	25,886	42.2	1.5	29,770	34.1	1.5
72 Computer and related services	16,606	27.1	1.0	30,944	35.4	1.5
Subtotal	42,492	69.3	2.5	60,714	69.5	3.0
Total of ICT industries	58,762	95.9	3.5	83,952	96.0	4.2
Other industries	2,510	4.1	0.2	3,469	4.0	0.2
All industries producing ICT	61,272	100.0	3.7	87,421	100.0	4.4
Total economy , all activities*)	1,671,710		100.0	2,003,180		100.0

*) cf. Federal Statistical Office, publication series 18, 1.4, table 3.2.1, August 2005

2.2.4 ICT for consumption and fixed capital formation

ICT final consumption expenditure comparable with expenditure on clothing

Final consumption expenditure on ICT goods and ICT services increased in the period from 1995 to 2004 from Euro 32.8 billion to Euro 50.4 billion. Their share of all final consumption expenditure was roughly 2.3% in 1995, and only changed negligibly until

2004, reaching 2.9%. Despite these values which appear low, it is worth noting the fact that this expenditure was comparable to the expenditure on clothing (Euro 56.4 billion), and that it was higher than final consumption expenditure of households for alcoholic beverages and tobacco goods (Euro 44.5 billion). The share of ICT services in all final consumption expenditure on ICT products has increased. Whilst it was about 58% in 1995, it increased to 68% in 2004. This is almost completely expenditure on telecommunication services.

Two-thirds of ICT investment gross fixed capital formation are made up by computers and software

Gross fixed capital formation of ICT products, at Euro 36.8 billion in 1995 and Euro 46.6 billion in 2004, was comparable with the corresponding values for consumption. With a share of 9.1% in 1995 and 12.1% in 2004, ICT however played a much more significant role in fixed capital formation than in consumption (2.3% and 2.9% respectively). Computers and software products accounted for two-thirds of gross fixed capital formation in ICT products in 2004. The share of software, at about 42%, was higher than in 1995 (31%).

2.2.5 ICT exports

Foreign buyers spent the equivalent of about Euro 44 billion on German ICT goods and services in 1995. This was more than twice as much in 2004, at Euro 98.5 billion. The shares in total exports were 9.9% in 1995 and 11.7 % in 2004. The foci here were ICT products from the sector of telecommunication and audio and video equipment, with a share of about 37% of all exports of ICT goods and services in 2004. In the same year, computer hardware and medical equipment, as well as measuring and photographic technology, had a share of about 21% each. The exports of software and associated services had a share of about 8%.

Strong growth in ICT exports

To sum it up, the shares of consumption (29%), gross fixed capital formation (32%) and exports (39%) in the total final use of ICT in 1995 were very close together. By contrast, the emphasis has clearly moved in 2004. Half of ICT products was exported, and only roughly one-quarter remained for consumption and gross fixed capital formation each in Germany.

2.2.6 ICT imports

All in all, ICT products were imported in 1995 at a value of almost Euro 48 billion. In 2004 this was roughly twice as much, at more than Euro 95 billion. The share of ICT in all imports of the respective year was 11.1% and 13% respectively. In 2004 ICT hence took up a much more important place overall among imports than in overall domestic production (share: 4.5%).

ICT foreign trade balance now positive

When comparing imports of ICT products with corresponding exports, a positive foreign trade balance emerges for 2004 in distinct from 1995. The main share of this is accounted for by the highly positive exports of medical, measuring and photographic technology. These products made a surplus of Euro 10.5 billion in 2004. By contrast, the foreign trade balance as to computers and other EDP equipment (hardware) and audio and video equipment is negative in the same year, at Euro 6.7 billion and Euro 2 billion respectively, because of a high level of imports. The situation as regards these ICT products is virtually unchanged in comparison to 1995. The positive foreign trade balance of the software sector increased from almost Euro 0.5 billion in 1995 to Euro 1.6 billion in 2004.

Almost half of the demand for ICT goods for consumption and fixed capital formation was met directly from imports, in both 1995 and in 2004. For ICT goods and services combined, this share was roughly one-quarter in both comparative years.

High direct ICT imports for consumption and fixed capital formation

The high import share considerably reduces the strength of ICT as an economic drive in Germany. Apart from the shares of re-exports contained in the exports, the high level of exports of ICT products is counteractive in some cases. Re-exports are imports of goods which leave the country again in different packaging or slightly processed. Their share of total ICT exports was roughly 50% in 1995, and about 35% in 2004.

One-third of total demand for ICT products for consumption, fixed capital formation and exports was directly met from imports in 1995 or was re-exported. For 2004, this share was still as high as 28%. For the final demand for ICT goods, the import share was 47% in 1995 and 41% in 2004.

Imports can be used not only for final demand, but also as intermediate consumption in the production of other products. They are then inputs for the production of domestic products. The imported intermediate goods for the production of ICT products are not only ICT products which are processed, but also other products. In order to cover all imported intermediates, it is not sufficient to observe only those imports which are immediately put into ICT production. Rather, the import content of the intermediates of intermediates must be included etc. The totalled amounts of these intermediate consumption chains can be calculated in the context of input-output analyses. According to these calculations, the total imports used for the production of ICT products increased from almost Euro 10 billion in 1995 to Euro 24.2 billion in 2004. The share of the corresponding imports for the production of ICT services was rather small, at 18% and 15%.

More imports for ICT production

The share of imports of intermediates in the value of all domestically-produced ICT products for the total final use increased from 13.2% in 1995 to 17.3% in 2004. In particular for ICT goods, the share of imports of intermediates was roughly 19% in 1995. It rose to 26% by 2004. According to the results of the input-output calculation, the import content of exports of ICT products (not incl. re-exports) increased from 22.3% in 1995 to 27.9% in 2004. With exported ICT goods, the import share was roughly 25% in 1995, and reached almost 32% in 2004.

2.2.7 ICT and gross domestic product

In accordance with the use approach, gross domestic product (GDP) can be formed by adding the demand components of consumption, gross fixed capital formation and exports, and by deducting imports.

Share of ICT in gross domestic product rose to 6.8%

Accordingly, the share of ICT goods and services combined in comparison with the GDP of 1995 was 4.7%, and increased to 6.8% of GDP in 2004. Expressed in absolute values, this made up Euro 87 billion in 1995, and 150.2 billion in 2004 (cf. Table 2).

ICT goods had a share of 64% in this in 1995, which fell to about 61% by 2004. Among these, audio and video equipment, at 27% and 24% respectively, accounted for the largest share in the comparative years. The share of the EDP sector (hardware and software) was 31% in 1995 and 33% in 2004. The weights of both have shifted somewhat towards software in this period.

Table 2:

Contribution of ICT goods and services to Gross Domestic Product
Millions Euro

ICT Product groups	Current prices	
	1995	2004
Goods		
30 Manufacture of office machinery and computers	14,944	23,025
31 Manufacture of electrical machinery and apparatus n.e.c.	3,143	5,250
32 Manufacture of radio, television and communication equipment and apparatus	23,157	36,408
33 Manufacture of medical, precision and optical instruments, watches and clocks	11,419	21,600
22, 24, 25, 35 Publishing, printing, manufacture of chemicals, rubber and plastic products, other transport equipment	3,134	4,880
Subtotal	55,797	91,163
Services		
64 Post and telecommunication services	19,039	32,621
72 Computer and related services	12,190	26,452
Subtotal	31,229	59,073
Total ICT	87,026	150,236
Total economy*)	1,848,450	2,215,650
ICT in % of Total	4.7	6.8

*) cf. Federal Statistical Office, publication series 18, 1.4, table 2.3.1, current prices, August 2005

2.3 Selected economic indicators on ICT

2.3.1 Structure of the information economy

In addition to the national accounts, business statistics offer a data source of ICT-specific information. Referring to the above OECD definition of ICT, ICT-relevant products are found both in the goods-producing sectors, with services related to ICT goods (such as in trade), and in the so-called ICT service sector (such as "hardware consultancy" or "data base activities"). An overview of the structure of this sector and its status in the economy is provided by Table 1 in the Annex.

ICT industries vary in size

The ICT industries are composed of a variety of economic activities (providing ICT goods or services). They differ in size, as to number of enterprises, number of employees or turnover. For instance, in 2002 most enterprises (total of 888) were engaged in ICT-related manufacturing activities in the economic activity "33.20 instruments and appliances for measuring, checking, testing, navigating and other purposes". At the same time, this activity was also the one with the most employment in 2002, accounting for roughly 106,000 employees. Even more employees are found with ICT services, and here in particular with "72.2 Software consultancy and supply" roughly 229,000.

A more differentiated and in part also more up-to-date insight into economic events in comparison with the national accounts results is provided if one looks at statistical data on ICT at goods level, such as from the foreign trade and production statistics, as well as from the price statistics. These data are provided on a monthly basis. The most up-to-date data at present are shown below.

2.3.2 Foreign trade

More ICT exports from than imports to Germany

ICT goods at a value of Euro 64.5 billion were exported from January to October 2005, according to preliminary figures from Germany. German exports were almost at the level of the previous year (+ 0.1%) in the first ten months of 2005. ICT goods had a share of 10.0% in relation to total German exports. German imports of ICT goods fell to Euro 62.6 billion (– 1.3%), and reached a share of 12.3% of all German imports. As in 2004, Germany exported more ICT goods than it imported. Because of conceptual differences, these absolute figures cannot be compared with the data on foreign trade within the national accounts.

Mainly ICT-relevant goods such as office machinery, instruments and appliances for measuring and insulated wire were exported from Germany (27%), as well as computers and peripheral equipment (25%). Imports were dominated by computers and peripheral equipment (33%).

Almost one-quarter of the ICT goods exported from January to October 2005 went to the three most important client countries. These were the United Kingdom, with a share of 9.3% of ICT exports, France (8.9%) and Italy (6.3%).

China largest supplier of ICT products

Roughly 40% of all ICT goods imported from January to October 2005 came from the three most important supplier countries of ICT goods – namely China, the United States and Japan. China accounted for 19.4% of ICT imports, the United States 10.1% and Japan 10.0%. In comparison with the first ten months of 2004, China was able to further increase its market share of German ICT imports (+ 17.5%), whilst fewer ICT goods were imported from the United States (– 8.9%) and Japan (– 5.0%).

Imports from China were above all computers and peripheral equipment (44%) and products for telecommunication (21%).

2.3.3 Production

German production focused on „manufacture of microchips“

It emerges from the quarterly production survey, which also specifies numbers of items in addition to the production value, that specific groups of product are of particular significance for Germany. Above all, these include integrated circuits which are included among electronic elements. Roughly 8.2 billion such items were produced in 2004 (6.4 billion items from the first to the third quarter of 2004, as against 5.4 billion items in the same period of 2005), and in particular microchips with 4.1 billion items in 2004 (and 3.3 billion items to September 2004 as against 2 billion items to September 2005).

When it comes to hardware, i.e. computers and their components, desktop computers and laptops are dominant, above all in quantitative terms. A total of 6.0 million of these were produced in Germany in 2004; after the three first quarters of 2005 it was 4.0 million. It is not possible to say much about production for the entire year 2005, since it is still open whether production in the last quarter is comparable with the year-end business in the last months of the previous year.

Indications of possible causes of production changes are provided by amongst others the price trends (above all in producer prices, where appropriate in conjunction with trends in import prices, even if they are not precisely comparable in methodical terms).

2.3.4 Prices

Prices of ICT products continue to fall

Computers and other information processing equipment produced in Germany became 15.7% cheaper from December 2004 to December 2005 (laptops and notebooks 21.9%, desktop computers 10.7%). This information, as well as all price trends listed below, was calculated using hedonic price indices. This calculation method permits price effects to be more adequately measured, even though they arise indirectly by means of improved product quality with sales prices which remain roughly the same.

Imports take on much greater market significance in this product group. Prices for imported computers and other information processing equipment fell between December 2004 and 2005 by 17.5%, among them laptops and notebooks by 20.9%, and with desktop computers by 13.5%.

An ongoing considerable fall in prices could be observed even with important starting products for ICT. For instance, prices for electronic valves and tubes and other electronic components produced in Germany have fallen by 17.6% since December 2004, and the corresponding import prices by 21.0%. The fall in price was particularly pronounced when it came to electronic integrated circuits and microassemblies, at 32.5% with those produced at home, and 32.9% with those imported from abroad.

Prices also falling for end users

Price trends are a major decision-making criterion not only for the economy. (Consumer) prices are also a major factor for demand by end users: The fall in prices of hardware for private consumers is continuing. Prices for information processing equipment (such as PCs) fell by another 7.5% between December 2004 and December 2005. The tariffs for Internet use fell once more in this period (– 3.8%).

3. Usage of information technologies in Germany and Europe – results of the EU pilot surveys

In addition to the macroeconomic impact of ICT, PC and Internet usage by enterprises and private households is the focus of interest at European level in particular. Initiated by the "eEurope 2005" action plan, and further supported by the European Council's "i2010 – European Information Society 2010" initiative, statistical surveys have been implemented on these questions since 2002. Comparable results have therefore been available in the context of the European Statistical System since 2002 on usage of ICT in enterprises and private households for most Member States of the EU. The annual pilot surveys provide data on which trends were shown by ICT usage in Europe and the status of Germany in a European context. Unless another reference period is stated, the results relate in each case to the first quarter of a year.

3.1 Internet usage in enterprises and private households

German households' Internet access high above EU average

In Germany 94% of enterprises (enterprises with at least ten employees) and 62% of private households (households with at least one household member under 75) had Internet access in the first quarter of 2005 (cf. Fig 1). Hence, the share of Internet-using enterprises in Germany was somewhat higher than in the European Union (EU-15), at 92% (values for the EU-15 are stated by Eurostat if information is available for at least 60% of the population and 55% of Member States. cf. Annex B for more details). A larger share of German households still go online than in the European average (53%). Also the share of individuals aged from 16 to 74 who regularly use the Internet privately or for work purposes in the first quarter of 2005, at 54%, was still above the average of the EU-15 (46%).

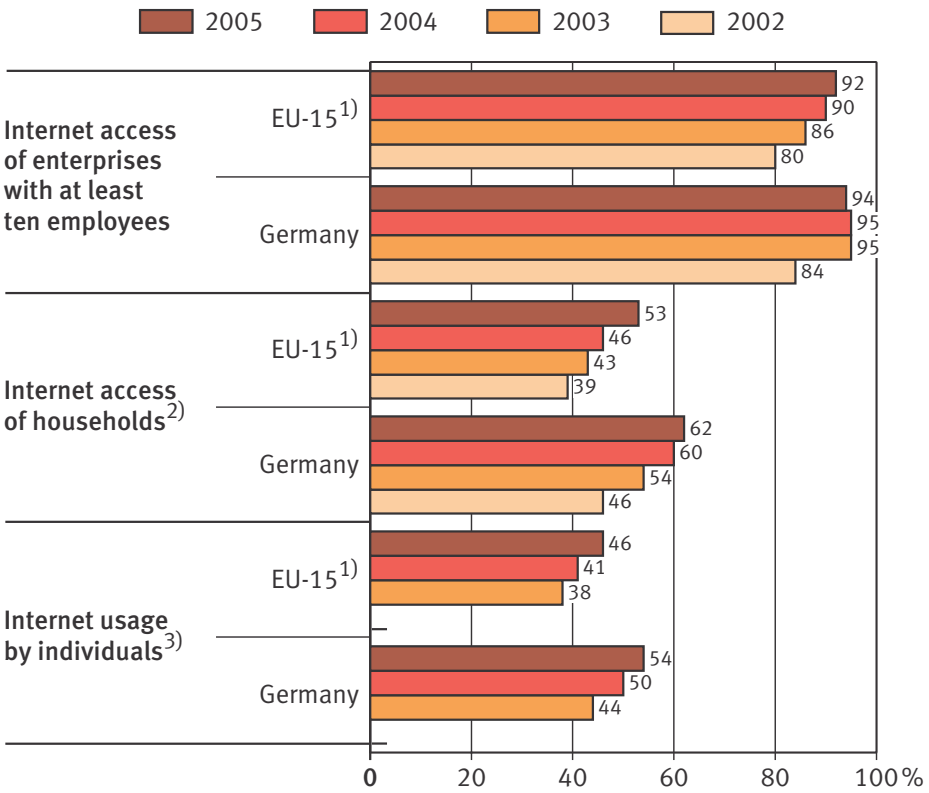
Modest development of Internet connections in German enterprises and households in an EU comparison

Whilst households' Internet access equipment – both in Germany and in the EU – was still much lower than that of enterprises, the increase in the level of equipment between 2002 and 2005 was much more pronounced in private households. The share of households with Internet access in the EU (EU-15) increased by 14 percentage points, from 39% to 53%. The corresponding share increased by 16 percentage points in Germany: from 46% in 2002 to 62% in 2005. Equipment of enterprises with Internet access increased by 12 percentage points in the European Union (EU-15) in the same 2002 to 2005 period, and by 10 percentage points in Germany. Hence, not only is the increase less pronounced than among private households, at the same time a satiation limit has applied in Germany since 2003 among enterprises – at least for enterprises with at least ten employees which are included in an international comparison – at almost 95%. The increase in Internet access among enterprises as in private households over the whole period of 2002 to 2005 is measured in percentage points roughly on the scale of the whole EU-15; trends in detail are different, however. Whilst virtually no more changes are revealed in Germany in the observed sectors as against 2004, comparably marked increases are observed in the European Union (EU-15), particularly from 2004 to 2005.

The increasing spread of Internet access in enterprises and in households is also reflected in trends in Internet usage among the population: The share of individuals using the Internet at least once per week among the 16- to 74-year-old population increased in Germany from 44% in the first quarter of 2003 to 54% in 2005. Hence, the increase in the total period from 2003 to 2005 was slightly higher than trends in the whole of the EU-15, where the share increased from 38% in 2003 to 46% in 2005. Here too, the change as against 2004 in comparison to the EU-15 was somewhat more modest in Germany.

Figure 1

Internet access of enterprises and households, regular usage of the Internet by individuals in the EU and in Germany 2002 to 2005
in %



1) Mean value for the European Union with formerly 15 Member States.– 2) Households with at least one household member under 75.– 3) Individuals aged 16 to 74 who used the Internet at least once per week in the first quarter; no comparable data are available for 2002.

Federal Statistical Office 2006 - 15 - 0405

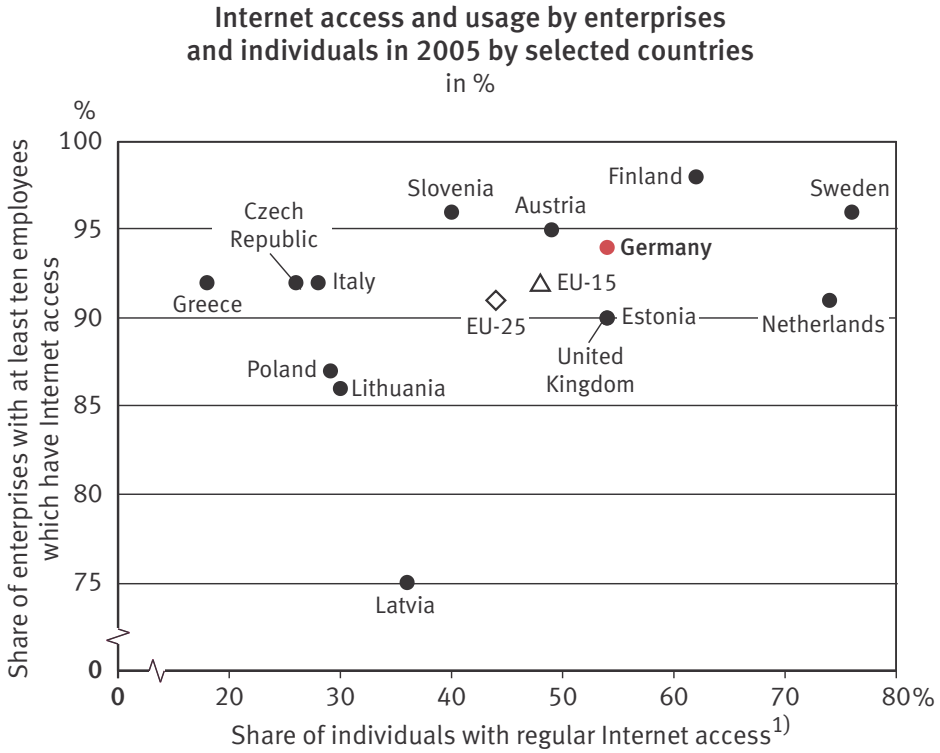
Germany above EU average in Internet usage, but does not head the field

In contradistinction to enterprises, which are only slightly above-average as to the spread of Internet access in an EU comparison, both the share of German households with Internet access (62%) and the share of individuals using the Internet regularly (54%) is above average in a European comparison. Nevertheless, Germany holds a peak position in Europe in this respect neither among enterprises nor among individuals. Figure 2 shows that in the Scandinavian countries Sweden and Finland not only the share of enterprises with Internet access, at 96% and 98% respectively, was higher than in Germany, but above all a much larger section of the population in Sweden used the Internet regularly (76%).

The European comparison shows that most countries have increased the level of equipment of enterprises as against 2004: The share of enterprises equipped with an Internet connection was above 85% in almost all Member States portrayed, and in most in fact exceeded 90%. The distance between the countries which have belonged to the European Union for a long time and those which acceded in 2004 was thus reduced. Greater differences still exist with Internet usage by individuals. In most new Member States, as well as in Greece and Italy, Internet usage by individuals was much less common than in the average of EU Member States. Whilst, therefore,

Internet access is evidently an economic necessity in enterprises in the European countries, and hence on the whole is very common, considerable differences are apparent when it comes to the population's regular Internet usage, which ranges from 18% in Greece to 76% in Sweden.

Figure 2



1) Persons aged from 16 to 74 who used the Internet at least once per week in the first quarter.

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It should be taken into account with these international comparative figures that results are only available for enterprises with at least ten employees. If – as with the national results – smaller enterprises are also included, this leads to much smaller shares of Internet access (as to results for all enterprises cf. Chapter 4). In the case of Internet usage by individuals, the population aged from 16 to 74 is portrayed in an international comparison, while for households only those with at least one household member under the age of 75 are included. The national results in Chapter 5 cover all individuals from ten years of age and all households.

Usage of broadband connections

Broadband connections permit faster transmission of large information volumes; the construction of a broadband infrastructure constitutes a major precondition for multimedia applications and for the expansion of ICT.

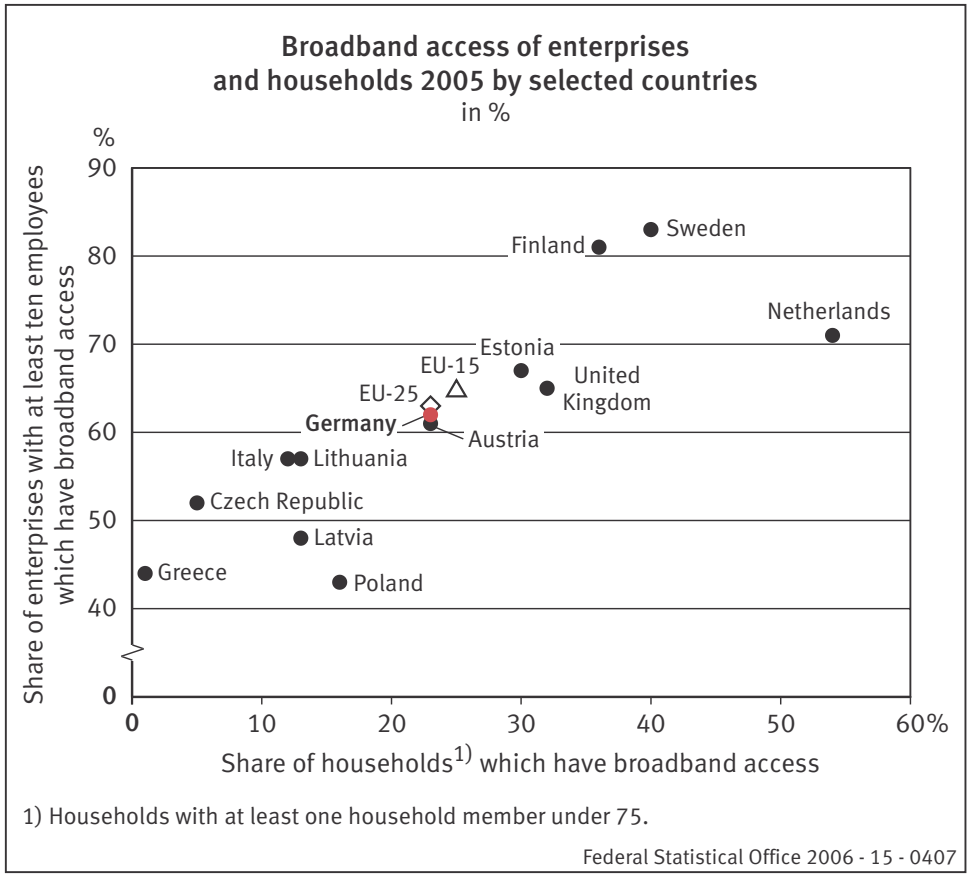
Broadband usage by German enterprises and households is within the EU average

62% of all enterprises and 23% of all households in Germany had broadband access in the first quarter of 2005 (cf. Fig. 3). This includes both DSL and other broadband technologies such as the cable TV network. The other households used ISDN connections and the telephone line with an analogue modem. Germany is thus close to the average values of the EU-15 (enterprises 65%, households 25%). Also with broadband access, Scandinavian, as well as Belgian and Dutch households and enterprises, were much better equipped than the EU average.

Increase in broadband connections in Germany slightly below average in an EU comparison

All in all, dynamic growth is recognisable in the spread of broadband access. This applies particularly to private households: Here, the share with broadband access in the EU-15 average increased by 8 percentage points within one year, from 17% to 25%, and by 5 percentage points in Germany, from 18% to 23%; the latter corresponds to growth by more than one-quarter. Among enterprises in Germany, the increase was only slightly lower than the EU-15 average: in this case, the share with broadband access EU-wide (EU-15) increased from 55% in 2004 by 10 percentage points to 65%; the increase among German enterprises was 8 percentage points (from 54% to 62%). In the observation, one should also consider that the figures only relate to the first quarter of 2005. In view of the rate of development in the broadband sector in 2005, the increase over the entire year may indeed have been much greater.

Figure 3



1) Households with at least one household member under 75.

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Here, one should however allow that enterprises and households were selected as a basic total irrespectively of whether they had Internet accesses. If only the share of broadband users is observed among such households and enterprises which are indeed equipped with Internet access, the position of Germany in the European comparison is placed into perspective. In relation to enterprises and households which have an Internet connection, only a below-average share of households had broadband access in Germany. In the European Union (EU-15), the shares, at 48% of households and 71% of enterprises, were much higher, by 10 and 5 percentage points respectively, than the German values (38% and 66% respectively). There is still potential for improvement here, when measured by the European values.

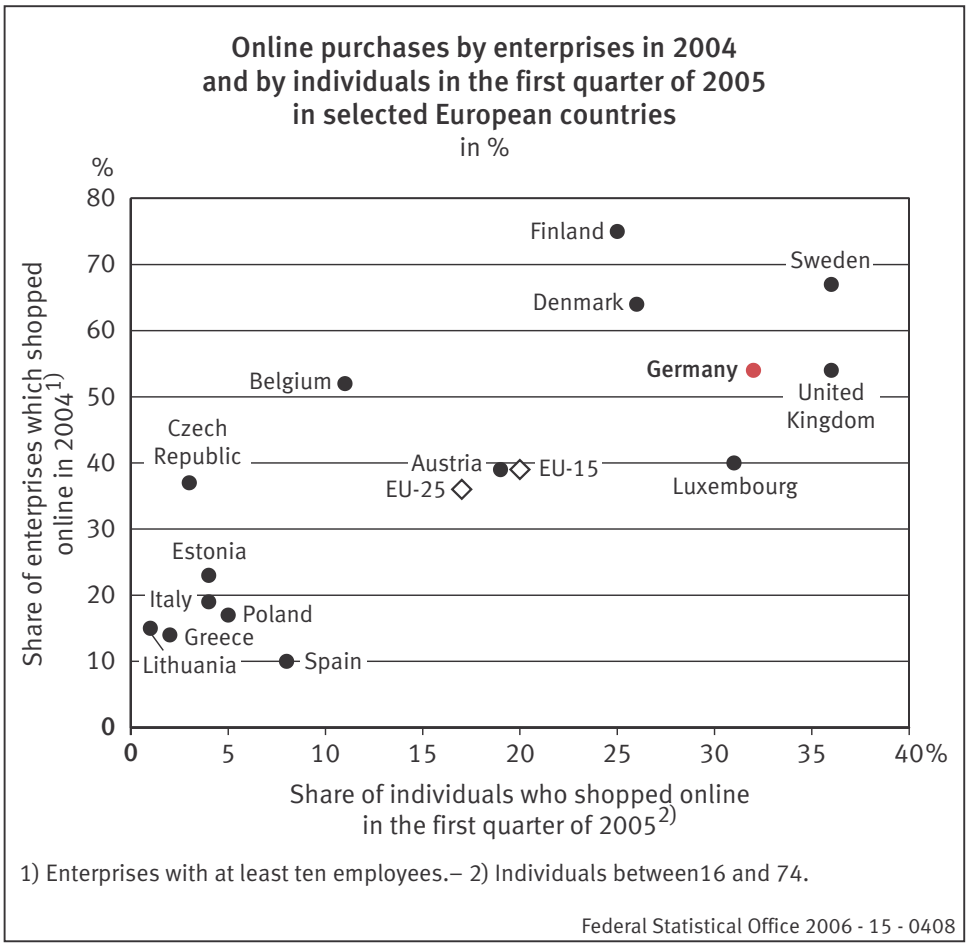
3.2 Online transactions of enterprises and private individuals

Enterprises and the population are in the upper EU range in online purchases

The Internet has become a major medium in national and international economic transactions in recent years. More and more enterprises are represented on the Internet, and the boundary between the "New Economy" and the "Old Economy" is in flux. In addition to enterprises, millions of people in Germany and abroad also use the Internet to order books, CDs, travel and much more besides. Today, not only goods, but also many services are offered on the Internet.

In a European comparison, Germany is among the leaders with usage of the Internet for online shopping, both among enterprises and private individuals. 32% of all individuals aged between 16 and 74 shopped on the web the first quarter of 2005. Hence, Germany is just ahead of Luxemburg (31%) or Finland (25%), and is only beaten by Sweden and the United Kingdom (both 36%). In the EU-15 average it was 20%, in all 25 EU Member States 17%.

Figure 4



1) Enterprises with at least ten employees.– 2) Individuals between16 and 74.

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When it comes to the share of enterprises which had shopped on the Internet in the calendar year 2004, the distribution looks similar. The field is headed by Finland, at 75%, followed by the other Scandinavian countries Sweden (67%), Denmark (64%) and Norway (57%). In Germany and in the United Kingdom, 54% of all enterprises used the Internet for purchases, and these countries were therefore 15 percentage points above the EU-15 average. The much larger share of the EU Member States, by contrast, shows a share of below 10% with individuals' online transactions and of below 36% when it comes to enterprises.

Above-average increase in online purchases among the German population

As to the chronological development of Internet purchases by individuals in Germany, the share of Internet buyers among the population has increased from 17% to 32% since 2002. Hence, the share has almost doubled; the increase is higher than the average growth rate for the EU-15 States; here, the share of online buyers increased from 13% in 2002 by roughly half to 20% in 2005. Higher growth rates above all are recorded by those countries in which the share of online shoppers was much lower in 2002: The highest growth rate was recorded in Austria, where the share more than doubled, from 8% to 19%.

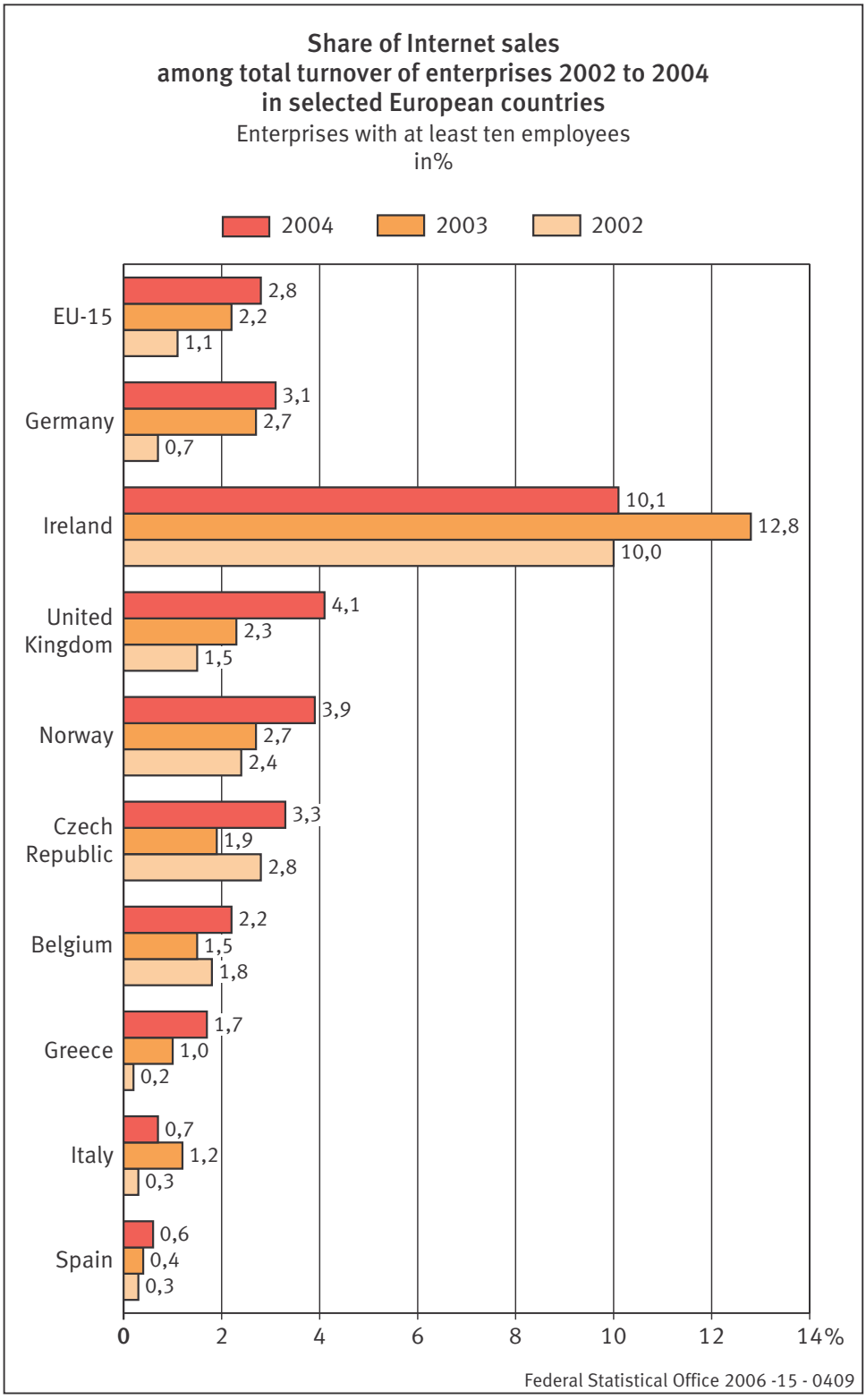
The share of Internet purchases by enterprises with at least ten employees in the EU-15 increased by 5 percentage points from 2003 to 2004. The share of German enterprises only grew by 3 percentage points in this period. Particularly in Norway (2003: 47% and 2004: 57%), Denmark (2003: 58% and 2004: 64%) and Finland (2003: 71% and 2004: 75%), the share of enterprises making purchases online also continued to increase markedly, even from a high starting point. By contrast, a slight fall was recorded in Sweden (2003: 68% and 2004: 67%). Purchases by enterprises via the Internet still played only a subordinate role in Spain (2003: 9% and 2004: 10%).

Enterprises not only make purchases on the Internet, but also sales. Here, enterprises sell their goods and services both to other enterprises (B2B) and to private households (B2C). In the EU-15, the share of enterprises with online sales for 2004 as in the previous year accounted for 12%. The share of German enterprises with ten employees and more was 17% (2003: 16%). The largest share of online sales in 2004 was in Denmark, at 35% (2003: 27%), followed by Ireland (2003: 28% and 2004: 22%) and Sweden (2003: 19% and 2004: 22%).

German enterprises within the average in share of Internet sales among total sales

If the share of electronic business transactions, in other words Internet sales, is viewed by total sales by enterprises with at least ten employees, this is 3.1% for 2004 in Germany, and hence 0.4 percentage points higher than in 2003. The corresponding share for the EU-15 increased from 2.2% to 2.8% in the same period. The largest share of online sales among total sales in 2004 was in Ireland (10.1%), followed by the United Kingdom (4.1%) and Norway (3.9%).

Figure 5


Share of Internet sales
among total turnover of enterprises 2002 to 2004
in selected European countries
Enterprises with at least ten employees
in%
2004
2003
2002
EU-15
2,8
2,2
1,1
Germany
3,1
2,7
0,7
Ireland
10,1
12,8
10,0
United Kingdom
4,1
2,3
1,5
Norway
3,9
2,7
2,4
Czech Republic
3,3
1,9
2,8
Belgium
2,2
1,5
1,8
Greece
1,7
1,0
0,2
Italy
0,7
1,2
0,3
Spain
0,6
0,4
0,3
0
2
4
6
8
10
12
14%
Federal Statistical Office 2006 -15 - 0409

4. Usage of ICT in enterprises

Only enterprises with ten employees and more were studied in the European comparison. The results for Germany below relate to enterprises of all size classes. With the exception of the agricultural and mining sectors, enterprises from almost all economic activities have been surveyed. Because of its structural differences as against the other industries, the financial services sector was covered in a separate survey with, in some cases, a much-reduced list of questions. For this reason, it is not always possible to accommodate the financial services sector in all average values stated for all enterprises. Both surveys took place in the context of the European Union's "eEurope 2005" Action Plan, with an identical list of questions and standardised definitions.

4.1 Usage of computers and the Internet by enterprises

4.1.1 Usage of computers

As in the previous year, 84% of enterprises used computers in their business operations

84% of all enterprises in Germany used computers in their business operations in 2005, accounting for exactly the same number as in the previous year. All manufacturing enterprises in the sectors manufacture of transport equipment, manufacture of coke, refined petroleum products, as well as manufacture of other chemical products, certainly had access to computer technology. Also in the sectors computer and related activities, as well as in research and development, all enterprises without exception used computers in their business operations in 2005. Among hotels and restaurants, by contrast, it was only slightly less than one enterprise out of two.

If one takes a differentiated view of economic activities according to the individual size classes of persons employed (cf. Table 3), it is clearly shown that almost all enterprises with 20 or more employees in the economic activities observed have been using computers for several years. In some economic activities, the small enterprises with fewer than 20 employees were, however, able to considerably reduce their deficit as against larger enterprises. There was notably rapid growth in the number of computer users in the sectors real estate activities (34 percentage point increase as against 2003, reaching 85% in 2005), as well as in renting of machinery and equipment without operator and of personal and household goods (increase by 22% points as against 2003, reaching 87%).

External access to enterprise's IT systems +2 percentage points as against 2004

ICT usage provides enhanced possibilities to access all necessary data in the enterprise for employees outside the workplace, hence creating new ways of working, such as teleworking (remote employment). In 2005, 13% of all enterprises enabled employees to access an internal IT system from outside their company premises, up from 2004's figure of 11%.

Table 4 shows that the share of teleworkers also increases with increasing enterprise size. Hotels and restaurants, as well as construction, have the smallest number of staff who can access the enterprise's IT systems from outside. In contrast, the sectors recreational, cultural and sporting activities, as well as financial intermediation in particular, have the largest number of staff members who are able to access their enterprise's computer systems via networks.

Table 3: Usage of computers by economic activity and size class 2003 to 2005

Economic Activity	Enterprises with ... persons employed											
	1-19			20-49			50-249			250 or more		
	2003	2004	2005	2003	2004	2005	2003	2004	2005	2003	2004	2005
	in %											
Total	79	82	82	98	98	97	99	99	99	100	100	100
Manufacturing	85	83	86	99	97	98	100	100	100	100	100	100
Electricity, gas and water supply	.	95	93	.	100	98	.	100	98	.	100	100
Construction	90	90	85	99	99	99	100	100	100	100	100	100
Wholesale and retail trade	79	84	81	99	98	98	99	100	99	100	100	100
Hotels and restaurants	51	54	46	93	98	98	98	98	99	100	100	100
Transport and storage	81	81	74	99	98	100	99	100	99	100	100	100
Communication	68	91	78	91	87	100	92	97	100	93	100	100
Real estate activities	51	80	85	100	96	95	99	96	100	100	100	100
Renting of machinery and equipment without operator and of personal and household goods	65	84	87	98	100	100	100	100	89	100	100	100
Computer and related activities	100	100	100	100	100	100	100	100	100	100	100	100
Research and development	98	100	100	100	100	100	99	100	100	100	100	100
Other business activities	95	96	97	99	100	97	100	100	99	98	100	100
Recreational, cultural and sporting activities	.	87	94	.	98	100	.	99	100	.	100	100
Other service activities	.	54	54	.	96	89	.	98	99	.	100	100

4.1.2 Usage of networks and IT systems for order processing

Usage of networks in enterprises is continuing to increase steadily

Usage of networks in enterprises has increased continually since 2003 (cf. Fig. 6). LANs (local area networks) are the networks most frequently available in enterprises. 61% of all enterprises using computers used this type of local network in 2005 (2004: 54%, 2003: 45%). 15% of all enterprises networked their computers wirelessly (wLAN). 25% of enterprises had an intranet. As many as 14% of enterprises were networked with IT systems via an extranet, for instance networks operated by business partners. Enterprises from the industries recreational, cultural and sporting activities, as well as from financial intermediation, used networks more frequently than the average. Hence, for instance, 73% of financial service-providers used a LAN, 62% had an intranet and as many as 27% had an extranet. By contrast, relatively little use was made of networks in construction and in hotels and restaurants.

In 2005, almost 36% of all enterprises which used computers used an IT system for order processing (2004: 31%). These are special computer applications enabling automation of the processing of orders and invoices, as well as the implementation of purchasing. Enterprises from the sectors other services (46%), as well as

Table 4: Enterprises with remote employed persons who connect to IT systems through electronic networks by economic activity and size class 2004 and 2005

Economic Activity	Enterprises with ... persons employed							
	1-19		20-49		50-249		250 or more	
	2004	2005	2004	2005	2004	2005	2004	2005
	in %							
Total	9	10	21	22	30	32	43	56
Manufacturing	7	8	11	17	34	38	71	76
Electricity, gas and water supply	17	16	14	23	17	28	60	67
Construction	4	5	11	12	22	24	65	64
Wholesale and retail trade	8	10	26	24	41	43	65	71
Hotels and restaurants	5	2	11	14	18	20	50	54
Transport, storage and communication	7	7	16	17	36	42	64	63
Financial intermediation	26	38	37	28	38	25	50	43
Real estate, renting and business activities	14	16	39	41	47	51	61	66
Recreational, cultural and sporting activities	13	23	25	34	36	34	37	51
Other service activities	7	5	20	13	15	26	39	48

electricity, gas and water supply and wholesale and retail trade (each roughly 45%) used computer-aided order processing most often. Such a computerised procedure is frequently linked to other program systems within the enterprise. These largely entailed using invoicing and payment systems (68%), as well as IT systems to steer production, logistics and services (41%). A linkage to internal systems for ordering spare parts, by contrast, exists in only 16% of enterprises, the figure being 19% among IT systems for suppliers and 20% with IT systems for business customers. Here, too, one can see that more frequent use is made of these supporting application systems as the number of employees in the enterprises increases.

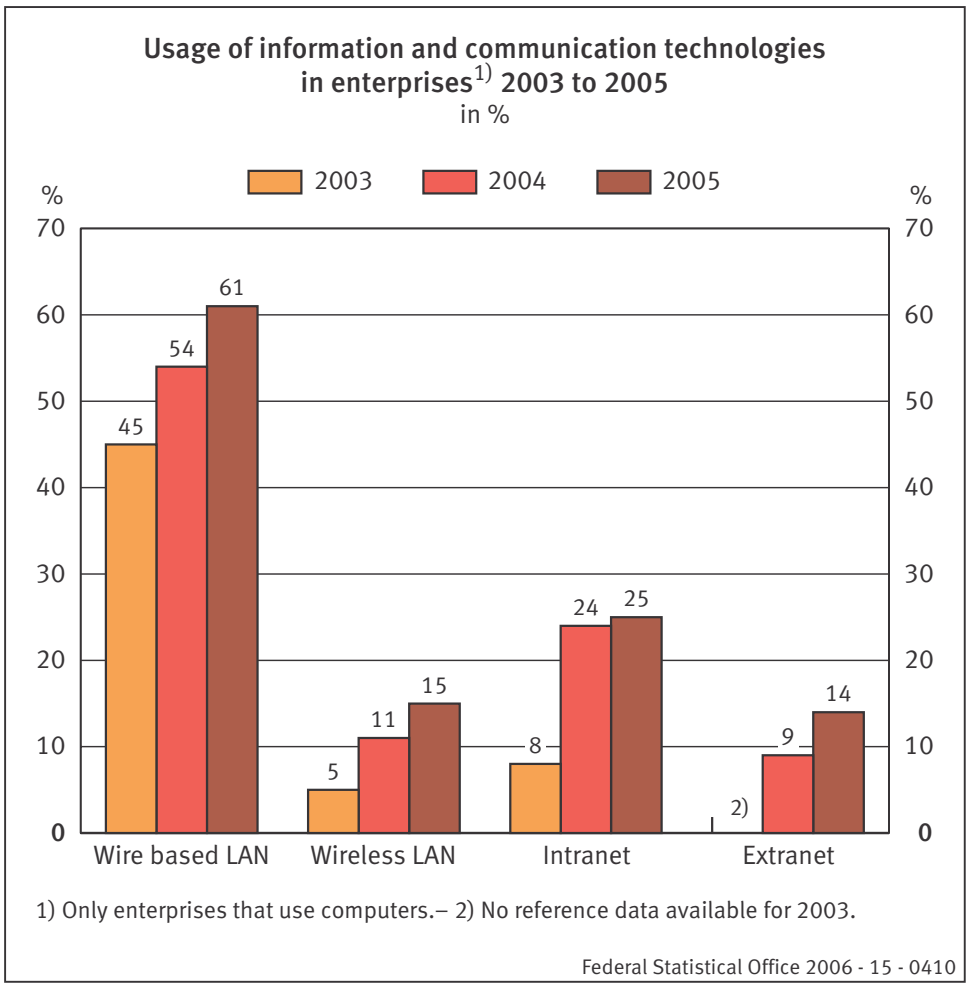
4.1.3 Usage of the Internet and types of connection

Enterprises' Internet usage stagnant

The number of enterprises with an Internet connection has remained unchanged in comparison to 2004. 78% of all enterprises used the Internet in 2005. In the industries manufacture of coke, refined petroleum products, manufacture of transport equipment, as well as research and development, all enterprises without exception were connected to the Internet. By contrast, fewer than one-third of enterprises in restaurants had an Internet connection (30%).

It is still the case that Internet usage becomes more common as the size of the enterprises increases. In 2005, 75% of enterprises with fewer than 20 employees had an Internet connection. This figure was 94% in the size class of 20 to 49 employees, and as many as 97% in the size class of 50 to 249 employees. Among large enterprises with 250 or more employees, virtually all (99%) had Internet access.

Figure 6



Increasing substitution of modem and ISDN by DSL connections

Most enterprises, albeit far fewer than in the previous year, still used ISDN to access the Internet (2005: 44%, 2004: 51%). 8% of enterprises accessed the Internet via an analogue modem; only 4% of enterprises used a wireless connection. Many enterprises are increasingly replacing modem and ISDN with DSL connections. A total of 44% of enterprises had a broadband connection in 2005; this accounts for 8 percentage points more than in 2004. The trend towards broadband connections is revealed in all economic activities observed (cf. Table 5).

Enterprises in the sectors recreational, cultural and sporting activities (62%), as well as electricity, gas and water supply (57%), still most frequently used DSL or other broadband technologies. The most marked increase in broadband connections as against 2004 was in manufacturing and among enterprises from the sectors real estate activities, renting of machinery and equipment without operator and of personal and household goods and economic service activities (in each case + 9 percentage points). The smallest numbers of enterprises had a broadband connection in construction and in hotels and restaurants in 2005, but here too the number increased in comparison with 2004.

4.1.4 Purpose of Internet usage

Enterprises use the Internet primarily for online banking

In 2005, the Internet was used primarily to access banking and financial services (cf. Fig. 7). 74% of enterprises with an Internet connection used this possibility (2004:

Table 5: Type of external connection to the Internet by economic activity 2004 and 2005

Economic Activity	Modem		ISDN		Broadband connection		Wireless connection	
	2004	2005	2004	2005	2004	2005	2004	2005
	in %							
Total	9	8	51	44	36	44	4	4
Manufacturing	11	8	53	46	33	42	3	4
Electricity, gas and water supply	5	6	40	33	52	57	3	4
Construction	11	9	62	56	25	32	4	3
Wholesale and retail trade	9	9	54	45	35	43	3	3
Hotels and restaurants	14	10	55	55	28	33	3	2
Transport, storage and communication	11	9	47	44	37	42	4	5
Financial intermediation	6	4	52	47	36	41	6	8
Real estate, renting and business activities	7	6	51	42	39	48	2	3
Recreational, cultural and sporting activities	7	5	31	26	55	62	6	7
Other service activities	12	11	47	41	37	43	3	5

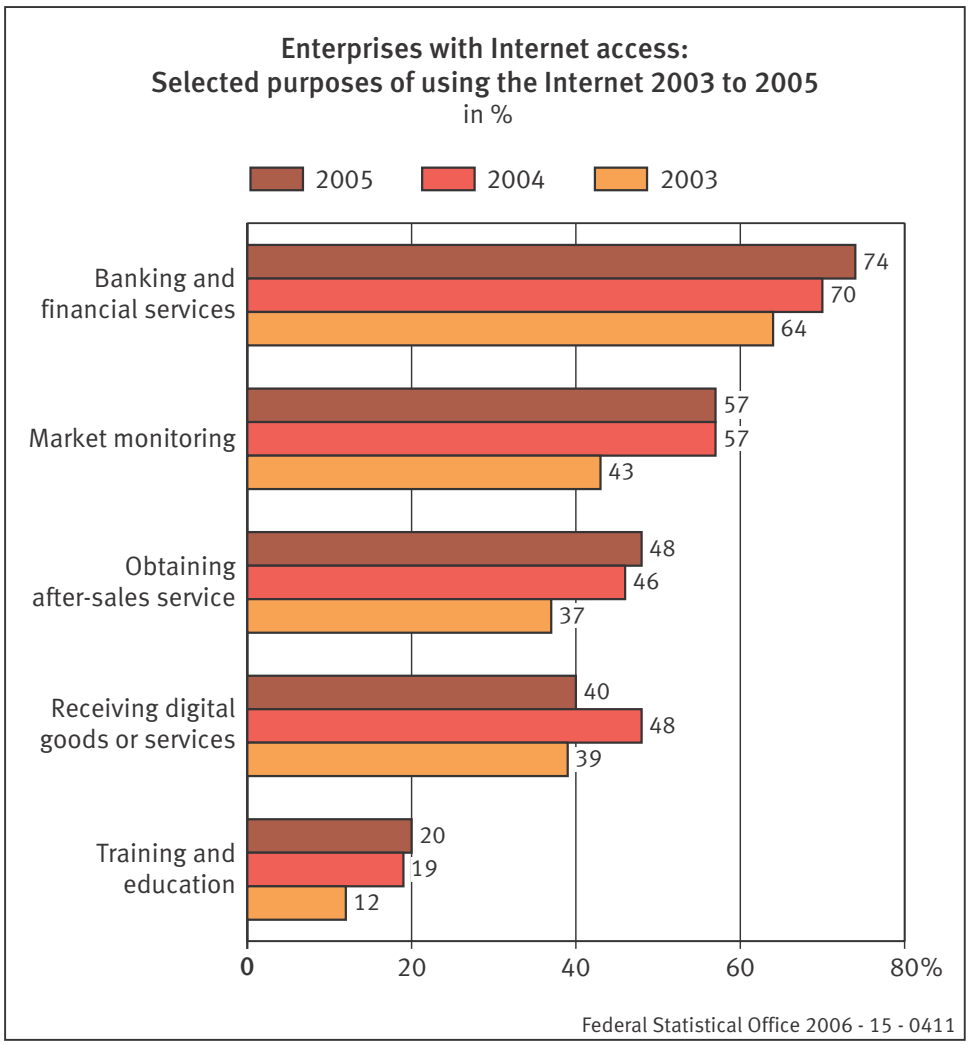
70%, 2003: 64%), in particular smaller enterprises with fewer than 50 employees. Enterprises from the sector computer and related activities most frequently did their banking and financial transactions online (91%). By contrast, this type of usage was represented disproportionately frequently in manufacture of leather and leather products (26%) and in the sector research and development (49%).

The Internet also counts among the major sources of information for market monitoring. As in the previous year, 57% of all enterprises used the Internet to obtain information on the market (2003: 43%). In the sector research and development, the figure was as high as 87%. Market monitoring is the main use to which the Internet is put by large enterprises. 86% of enterprises with 250 or more employees obtained market-relevant information via the Internet in 2005, against which only 69% of these enterprises used the Internet for banking and financial services.

Almost half of enterprises (48%) received digital goods or services (such as software and advisory services) via the Internet in 2005 (2004: 46%, 2003: 37%). It was as many as 80% among enterprises in the computer and related activities sector.

In contrast, obtaining after-sales services via the Internet appears to have fallen in significance in comparison to the previous year. Whilst in 2004, 48% of all enterprises used the Internet to obtain after-sales service, this figure had fallen to only 40% by 2005. This trend was observed among small and medium-sized enterprises in particular: A fall by 8 percentage points was observed among enterprises with up to 19 employees and by 6 percentage points among enterprises with 20 to 49 employees. Only in large enterprises with 250 or more employees has usage of the Internet to obtain after-sales services increased slightly (2005: 68%, 2004: 66%).

Figure 7



It is still the case that relatively little use is made of the Internet for training and education. 20% of all enterprises with Internet access used E-Learning services in 2005 (2004: 19%), the intensity of usage growing with increasing size of the enterprises. For instance, it reached a level of 30% among enterprises with 250 or more employees. Enterprises from the sectors computer and related activities (42%), as well as communication (38%) used E-Learning services particularly frequently. The financial services sector also demonstrated a clear advance in comparison to most industries in its usage of the Internet for basic and further training. 37% of enterprises in this sector used E-Learning, whilst in financial intermediation (except insurance and pension funding) it was in fact more than half of those enterprises which had an Internet connection (55%).

4.1.5 Usage of E-Government services

With the BundOnline 2005 E-Government initiative, which was adopted in November 2001, the federal Government undertook to make all Internet-capable federal administration services available online by the year 2005. Citizens and enterprises are to be able to access the administration's services around the clock. Internet technologies are to make administrative activity more efficient and more effective, and the burden on citizens and the economy is to be reduced.

30% of enterprises use online government authority services

Usage of E-Government has increased constantly in recent years, as has the range of services provided by the administration (cf. Fig. 8). As many as 30% of all enterprises in Germany in 2005 used the online service of the public administration (2004: 27%, 2003: 23%). If one only looks at those enterprises which have Internet access, the share of E-Government users is 38% (2004: 34%, 2003: 31%). Above-average usage was identified among larger enterprises with 20 or more employees.

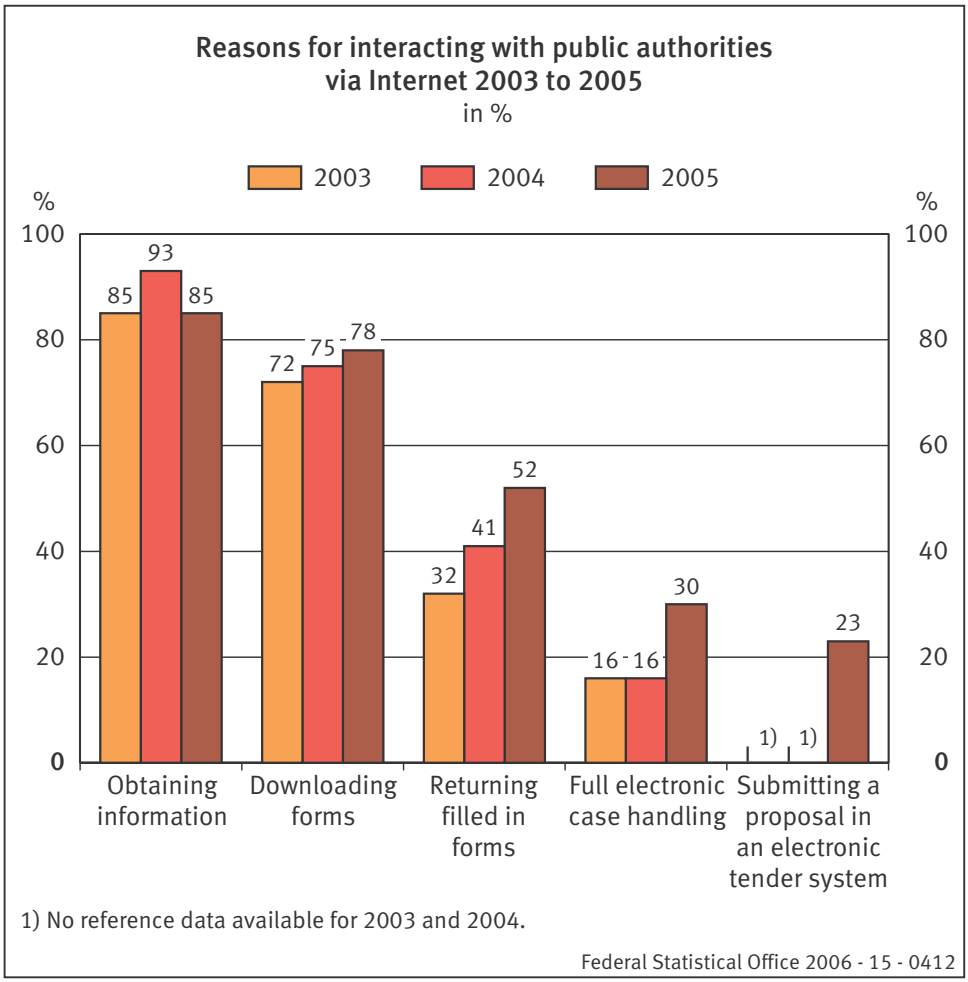
E-Government services were used particularly frequently by enterprises of electricity, gas and water supply (66% of enterprises with an Internet connection). However, enterprises from the sector recreational, cultural and sporting activities also make considerable use of the administration's online service (61% of enterprises). By comparison, usage in construction (28%) and in wholesale and retail trade (27%) was particularly slight.

Enterprises communicated with the public administration via the Internet most frequently in order to receive information (85%). 78% of enterprises availed themselves of the possibility to download forms, and 52% returned completed forms via the Internet.

Usage of full electronic case handling increased +14 percentage points

Full electronic case handling was especially popular. This includes, for instance, returning completed tax forms including electronic payment or reporting on foreign trade statistics to the Federal Statistical Office via the Internet with the aid of the IDEV online procedure (formerly: w3stat). Usage of full electronic case handling rose by 14 percentage points to 30% in comparison to the previous year.

Figure 8



1) No reference data available for 2003 and 2004.

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Public authorities are also increasingly expanding their services to include electronic tendering procedures. For instance, the Federation has been operating an E-tendering platform on the Internet since the beginning of 2003. Enterprises can search online for appropriate calls for tender and submit bids in electronic form. 23% of all enterprises with an Internet connection used E-tendering in 2005. It was enterprises in the sectors manufacture of transport equipment (55%), manufacture of textiles and textile products (49%) and financial intermediation (46%) which made the greatest use of electronic tendering procedures.

4.1.6 Websites of enterprises

59% of enterprises using the Internet have their own website

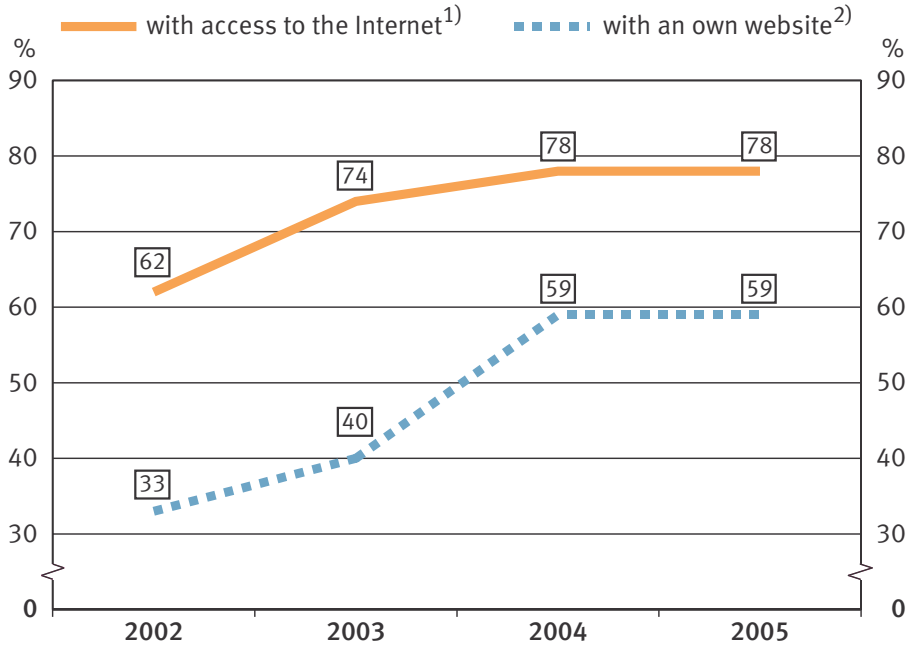
The share of enterprises using the Internet which also had their own website (homepage) in 2005 remained at a constant 59% in a year-on-year comparison (cf. Fig. 9). Slightly more than half of the smaller enterprises (54%) with fewer than 20 employees had a website in 2005. Among enterprises with 20 to 49 employees, 77% had a website, among enterprises with 50 to 249 employees it was 83%. Among large enterprises with 250 or more employees, 94% had their own Internet presence.

The share of enterprises with their own website was greatest (90% in each case) in the sectors hotels, financial intermediation (except insurance and pension funding), as well as recreational, cultural and sporting activities, whereas it was relatively small among enterprises from the sector transport, storage and communication, as well as in construction (46% and 47% correspondingly).

Enterprises primarily used their websites to market their own products. 87% of enterprises used their websites in 2005 for marketing purposes. 46% of enterprises placed after-sales services on their website, making 5 percentage points less than in the previous year. By contrast, the number of enterprises using their websites in 2005 to sell digital products or services increased (2005: 12%, 2004: 8%).

Figure 9

Percentage of enterprises with access to the Internet and an own website 2002 to 2005



1) As percentage of all enterprises.– 2) As percentage of enterprises with Internet access.

Federal Statistical Office 2006 - 15 - 0413

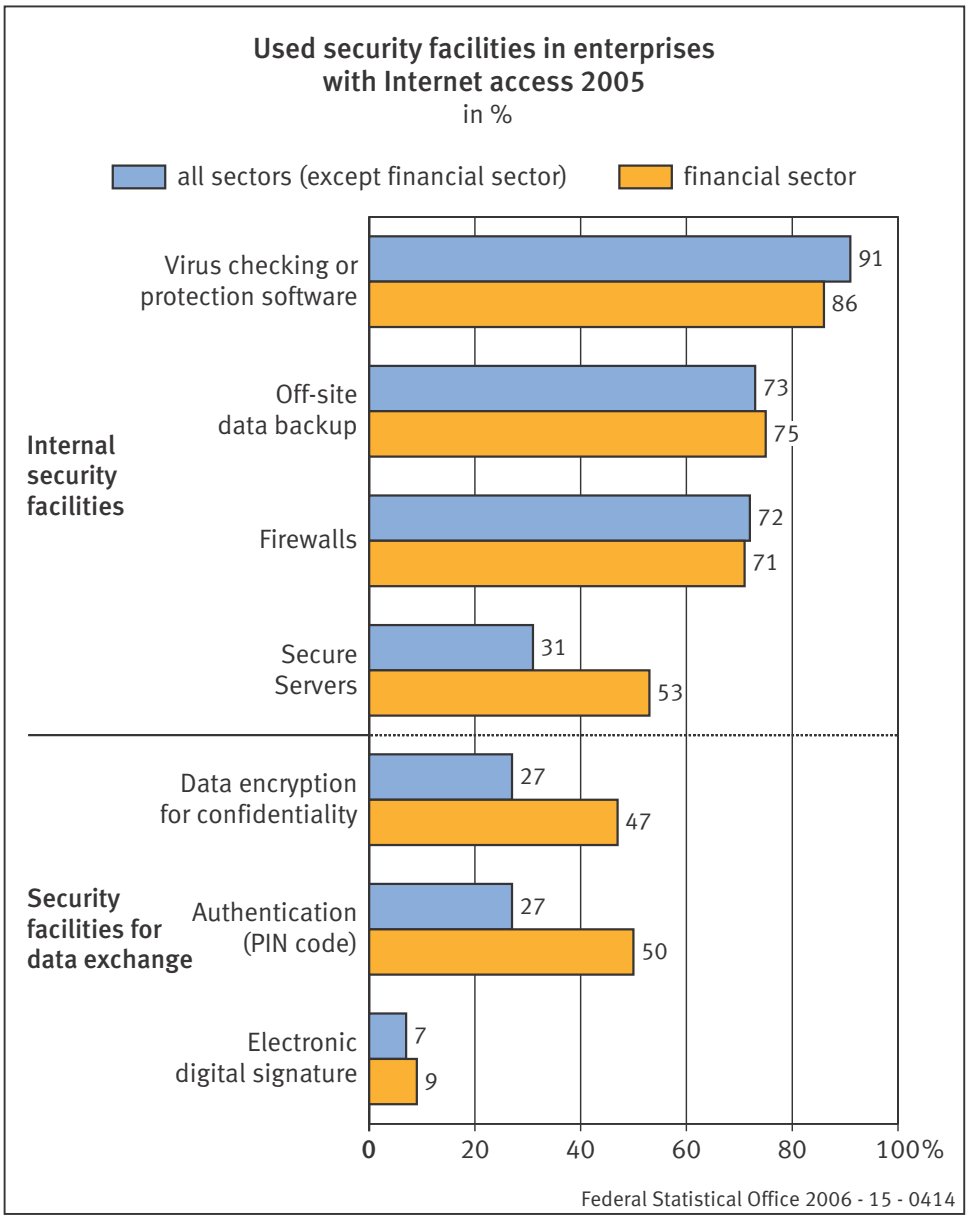
4.1.7 Usage of security procedures in enterprises

Usage of security facilities is far-spread in enterprises

As in the previous year, roughly 96% of all enterprises with an Internet connection (not including financial service providers) had at least one security facility in 2005. Furthermore, there is a considerable security awareness among enterprises with fewer than 20 employees. Almost 96% of them also used at least one security feature (2004: 95%). Virus protection software was used in 2005 by 90% of small enterprises with an Internet connection (2004: 88%, 2003: 79%). A firewall was used in 70% of these enterprises (2004: 56%, 2003: 41%).

A total of 97% of enterprises in the financial services sector used at least one security feature, all enterprises in this sector with 20 or more employees without exception having at least one security feature. 86% of all financial service providers used virus protection software in 2005 and 71% used a firewall.

Figure 10



Among internal security facilities, virus protection software was the most widespread in 2005, but considerable use was also made of firewalls and data back-ups on external drives (cf. Fig. 10). Secure servers, by contrast, were used much more intensively among financial service providers. 53% of enterprises in the financial sector used secure servers, but this applied to only 31% of enterprises in the other industries.

As to usage of security features deployed in the context of external communication, the financial services sector is very different to the other industries. Considerable requirements are made as to security in the financial services sector in particular because of the large amount of sensitive data being transferred. This is also reflected in the results.

27% of enterprises in all industries (not including the financial sector) which had an Internet connection enabled encrypted data transmission in 2005, and an equal number protected their transactions using PIN codes. Among financial service providers, 47% used encrypted data transmission, and 50% additionally protected data exchange using a PIN code. Digital signatures, by contrast, have not become common. It was only in financial intermediation (except insurance and pension funding) that considerably above-average usage was found: 21% of enterprises in this industry used the possibility of digital signatures.

21% of all enterprises with an Internet connection stated that they had had security problems in 2004, whereas this figure was 13% in the financial services sector. This means that the number of enterprises with security problems has fallen slightly in comparison to 2003 – by 1 percentage point among enterprises in all industries, and by 3 percentage points among financial service providers. Most of 2004's security problems were caused by computer viruses, Trojans or worms; these accounted for 99% in the financial sector (2003: 92%), and for 93% in the other industries, the same figure as in 2003.

4.2 E-Commerce

The term E-Commerce is understood as an exchange of goods and services for payment, where goods are offered and ordered by electronic means. It is immaterial here whether payment and possibly delivery of the goods or services also take place via an electronic network.

Participation in E-Commerce increasing

Roughly 44% of all enterprises played an active role in E-Commerce in 2004. If one observes only those enterprises which have an Internet connection, it was in fact almost 56%. This corresponds to an increase of 4 percentage points as against 2003.

4.2.1 E-Commerce via the Internet

43% of all enterprises use the Internet for E-Commerce

43% of all enterprises used the Internet for E-Commerce in 2004. If one only considers enterprises with an Internet connection, the share was around 55%. In comparison to 2003, participation in E-Commerce hence increased by 3 percentage points in each case.

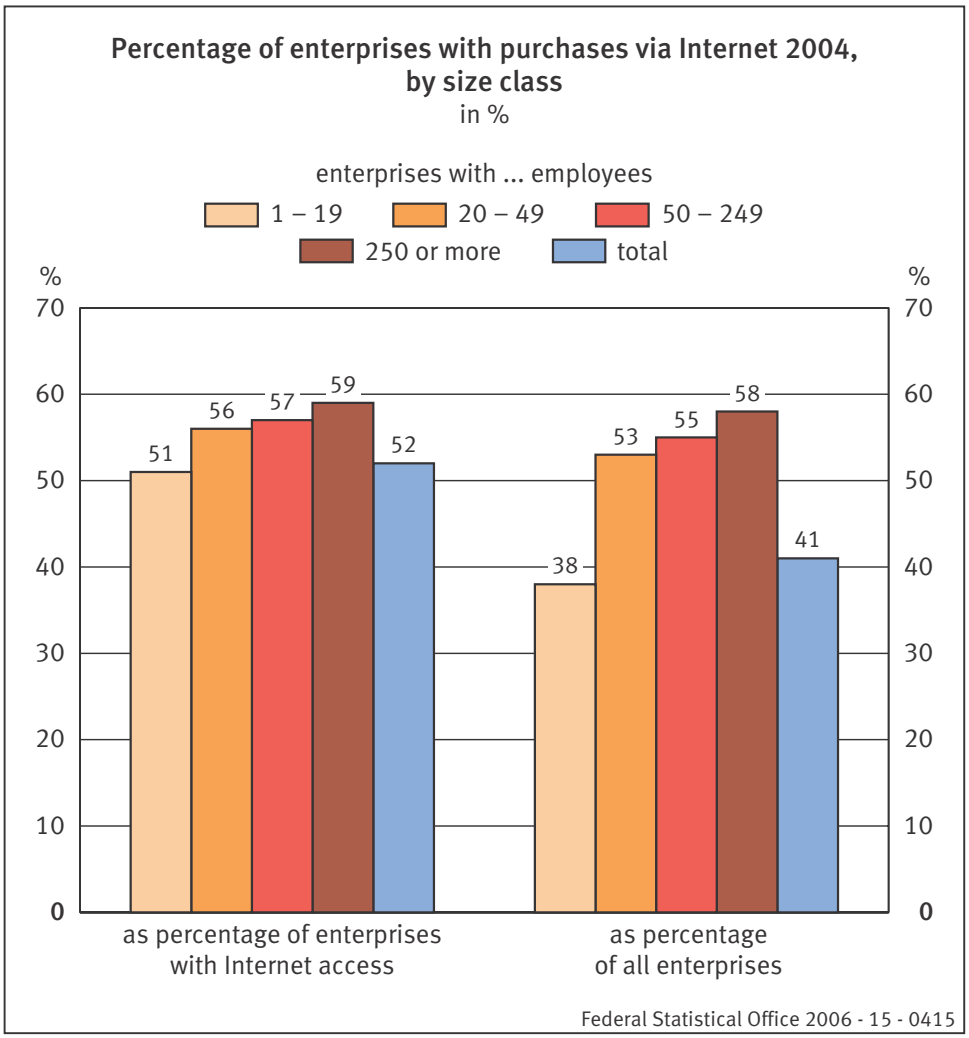
The largest proportion of enterprises participating in E-Commerce was from the sector recreational, cultural and sporting activities. Roughly 67% of enterprises in this sector using the Internet made purchases or sales via the Internet. In the economic activity electricity, gas and water supply, the share was only roughly 44%.

Purchases via the Internet

Purchases via the Internet increased by 4 percentage points

41% of all enterprises ordered goods or services via the Internet in 2004 (cf. Fig. 11). The share has hence increased by 4 percentage points in comparison to 2003. Usage of online purchasing varied considerably, depending on the number of employees. Hence, a total of 58% (2003: 53%) of enterprises with 250 or more employees ordered products or services via the Internet, whereas the share was 38% among enterprises with fewer than 20 employees, (2003: 35%).

Figure 11



Acquisition of goods via the Internet was very common in 2004, particularly in the sectors computer and related activities, as well as in research and development. In these sectors, 77% and 61% respectively of all enterprises placed orders via the Internet. By contrast, only 17% of enterprises in the sector hotels and restaurants placed orders by electronic means.

Of those enterprises which acquired products or services via the Internet in 2004, a total of 56% paid for their Internet shopping directly online (2003: 48%). Online payment facilities were used particularly frequently by smaller enterprises. 59% of enterprises with up to 19 employees paid their bills online, whilst the share was only 33% among enterprises with 250 or more employees. Specific Internet marketplaces were used by a total of 39% of enterprises when doing their Internet shopping (2003: 38%). In the sector computer and related activities in particular (48%), as well as in

recreational, cultural and sporting activities (47%), and in the sale, maintenance and repair of motor vehicles and motorcycles, as well as in real estate activities (45% each), the specific Internet marketplaces were used more frequently than the average.

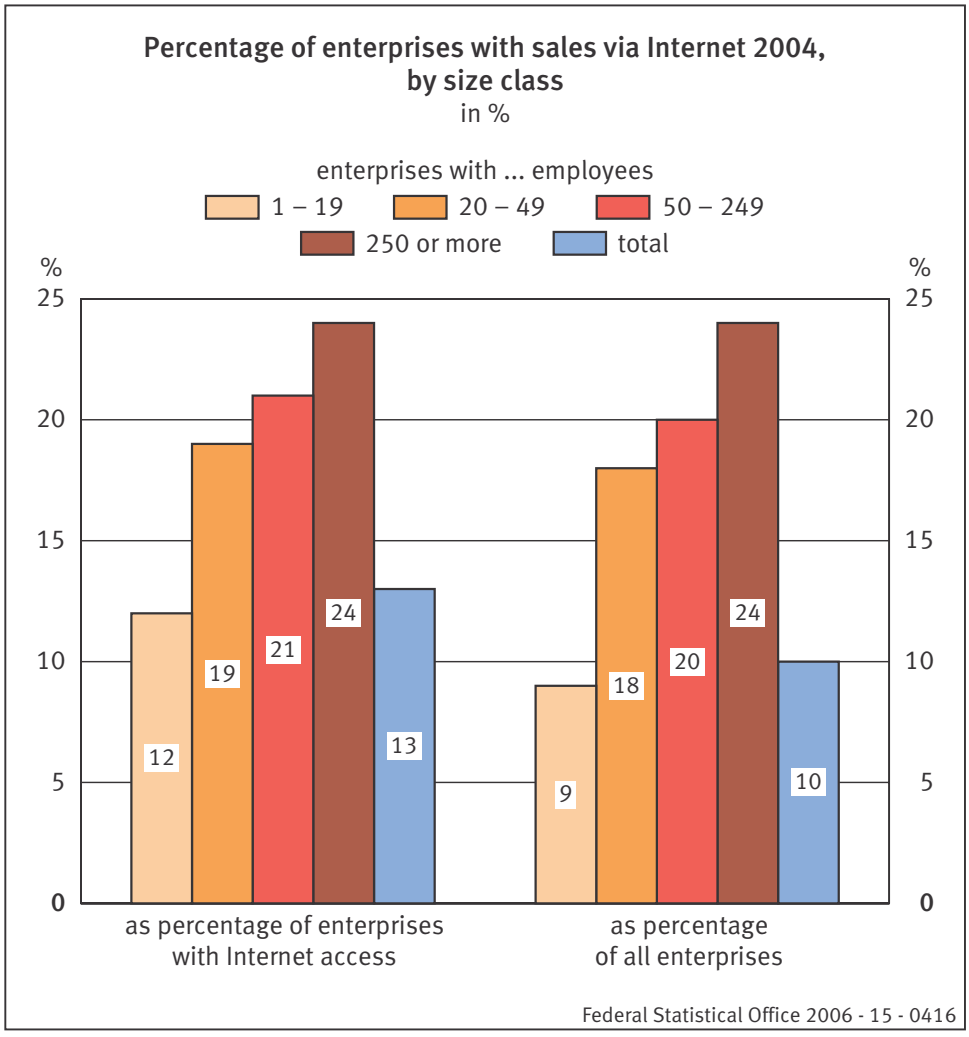
Sales via the Internet

The Internet as a sales channel still plays a subordinate role for enterprises

The Internet as a sales channel still plays a subordinate role for enterprises in Germany. Of the total sales achieved in 2004, only 2.7% were accounted for by Internet sales (2003: 2.4%).

The number of enterprises selling their products or services via the Internet in 2004 has remained constant over 2003's levels, at 10% of all enterprises. The sales channel Internet is still mainly used by enterprises with 20 or more employees (cf. Fig. 12).

Figure 12



Enterprises from hotels and provision of lodgings most frequently made sales via the Internet in 2004. 32% of all enterprises in this sector sold their services online. The sales channel Internet was also widely accepted in the manufacture of pulp, paper and paper products, publishing and printing, as well as in the sector recreational, cultural and sporting activities: Respectively 31% and 27% of enterprises in these economic activities sold their products and services via the Internet. In contrast, the Internet as a sales channel was scarcely relevant in 2004 for enterprises of electricity, gas and water supply – only 4% of enterprises in this sector made sales via the Internet.

Those enterprises which sold products or services online via the Internet in 2004 made roughly 9% of their total sales by these means (2003: 10%, 2002: 3%). Enterprises from the sectors sale, maintenance and repair of motor vehicles and motorcycles and renting of machinery and equipment without operator and of personal and household goods accounted for the greatest sales volumes via the Internet, with a share of 22% of their total sales in each case.

The ratio of customers ordering goods or services online has moved towards private customers in comparison to 2003. 61% of the products sold via the Internet in 2004 went to private customers, and hence 39% to enterprises or public administrations. The ratio was still almost balanced in the previous year: 53% of goods sold online were accounted for by private customers, 47% by enterprises. 91% of all Internet sales were made within Germany in 2004 (2003: 84%).

Sales via Internet marketplaces + 7 percentage points as against previous year

Of all enterprises which sold products or services via the Internet in 2004, 29% received online payments for their Internet sales. This means an increase by 4 percentage points as against 2003. 22% of enterprises which offered their goods and services via the Internet additionally used specific Internet marketplaces to make their sales. This share was still around 15% in 2003. Usage of Internet marketplaces in 2004 was particularly widespread among enterprises in the sectors sale, maintenance and repair of motor vehicles and motorcycles, as well as renting; 51% and 59% respectively of enterprises in these sectors sold their goods or services via Internet marketplaces in 2004.

Barriers to E-Commerce via Internet

Surveyed as to the reasons restricting or preventing online service in 2004 50% of all enterprises, which used computers quoted the lack of suitability of the products or services for sale over the Internet as the main reason (cf. Table 6). 70% of enterprises had said this in the previous year.

Lack of suitability of products or services is the main barrier to E-Commerce via the Internet

In particular, enterprises in the sectors computer and related activities, research and development, as well as electricity, gas and water supply, considered their products and services to be especially unsuited for sale over the Internet. In contrast, the nature of the products and services offered was thought to be a less serious barrier to E-Commerce in the sectors transport, storage and communication, recreational, cultural and sporting activities, as well as in hotels and restaurants. 38% of all enterprises (2003: 55%) also stated that their customers did not use Internet sales – non-usage of online services in 2004 hence constituted the second most important barrier. Uncertainties as to the legal framework of Internet sales, security problems in payments, as well as logistical problems, exerted a lesser influence on the extent of enterprises' online services.

4.2.2 E-Commerce via other networks

In addition to business relationships via the Internet, the enterprises operate business relationships on the basis of other electronic networks. These include fixed connections. Such networks are much less broad-based than the Internet, and have primarily become established in fixed customer-supplier relationships between enterprises. 2.4% of all enterprises used EDI (Electronic Data Interchange) or direct connections for purchases or sales in 2004. In volume terms, this small number of enterprises transacted a considerable share via these networks. Roughly 22% of sales and 25% of expenditure on goods and services were realised by these means by the enterprises in 2004 (2003: 13% of sales and 27% of expenditure). This is also made easier by the data formats and communication protocols in the EDI process being standardised all over the world.

Table 6: Barriers to Internet sales 2004, by economic activity

Economic activity	Percentage of enterprises that considered the following barriers to Internet sales as extremely or very important in %				
	Products/ services not suitable for sale over the internet	Customers not ready to buy via the Internet	Security problems concerning payments	Uncertain legal framework	Logistical problems
Total	50	38	28	29	19
Manufacturing	52	39	29	30	21
Electricity, gas and water supply	61	40	27	27	16
Construction	48	40	33	34	26
Wholesale and retail trade	45	41	33	34	26
Hotels and restaurants	41	35	24	22	15
Transport, storage and communication	39	39	31	22	24
Real estate activities	44	27	25	20	13
Renting of machinery and equipment without operator and of personal and household goods	44	41	25	25	24
Computer and related activities	64	51	34	34	10
Research and development	62	35	23	13	1
Other business activities	56	36	23	27	13
Recreational, cultural and sporting activities	40	28	26	20	17
Other business activities	58	45	28	25	17

EDI most common among financial service-providers

The lion's share of enterprises also doing their business via EDI came from the wholesale and retail trade (33%). Roughly 4% of all wholesale and retail trade enterprises therefore used EDI in 2004. EDI is however most frequently used in the financial services sector. Roughly 19% of all financial service-providers in Germany stated for 2004 that they used EDI systems to communicate with customers (2003: 12%).

4.3 Usage of ICT by employees

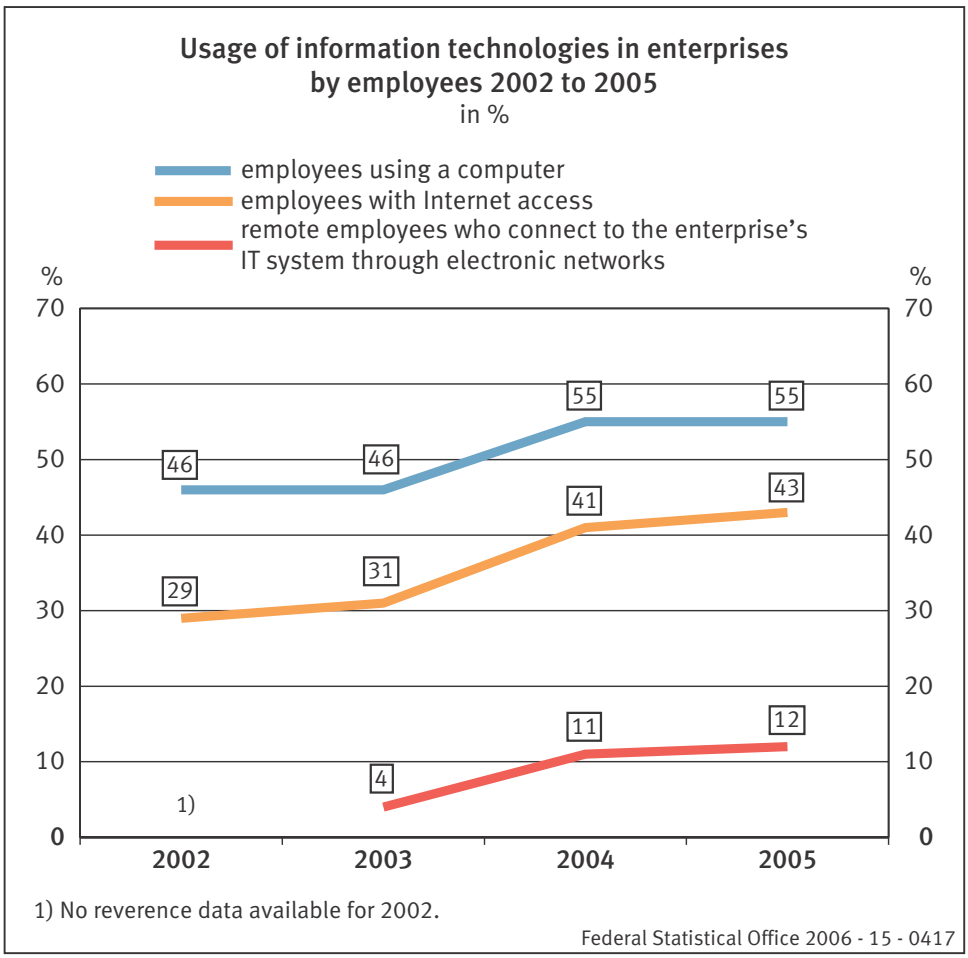
55% of employees work at computers, 43% of employees have an Internet connection

The share of employees working at a computer was 55% in 2005, unchanged from the previous year (cf. Fig .13).

More employees however had access to the Internet in 2005 – at 43%, the share had increased by 2 percentage points over 2004's figure.

The share of persons employed, who could access the IT systems of the enterprise from outside (for instance outside sales staff, teleworkers) also increased slightly, and was 12% in 2005 (2004: 11%, 2003: 4%).

Figure 13



4.4 Usage of information and communication technologies in enterprises of selected health care subsectors

The health care area will take on even greater significance in future against the background of an ageing society. At the same time, the increasing competitive pressure in the health care system will force providers to operate consistent cost management and more effective organisation. In this context, usage of modern information and communication technologies will play an ever increasing role.

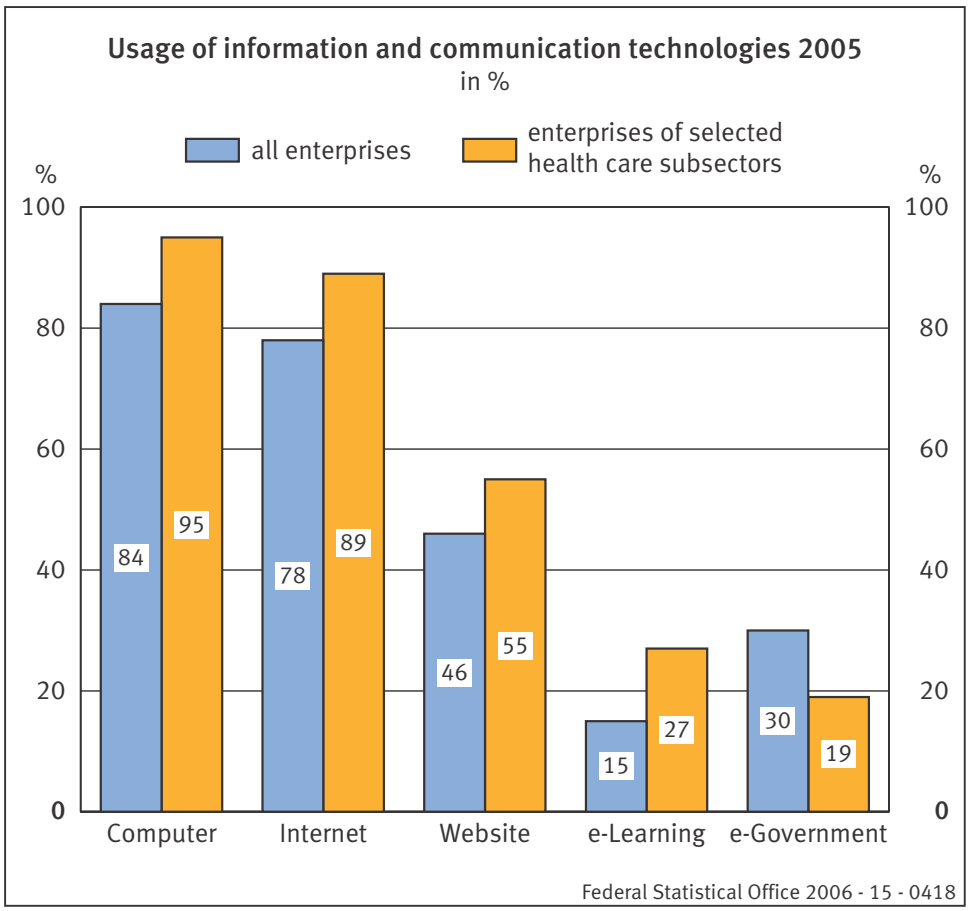
This study provides information on usage of information and communication technologies in specific subsectors of the health care system. Those producing and trading in pharmaceutical products and medical appliances, as well as chemists, opticians, and the private health insurance funds, were surveyed. The study was unable to cover other important health care subsectors, such as hospitals and non-hospital doctors.

Major benchmarks of the spread and usage of ICT will be viewed below in the selected health care subsectors for 2005, and in each case compared to the average values of all industries surveyed.

Usage of ICT in selected health care subsectors is remarkably high

Over all economic activities observed, roughly 84% of enterprises used computers in their business operations in 2005. The share was 95% in the selected health care subsectors, and was hence 11 percentage points above the average of all respondent

Figure 14



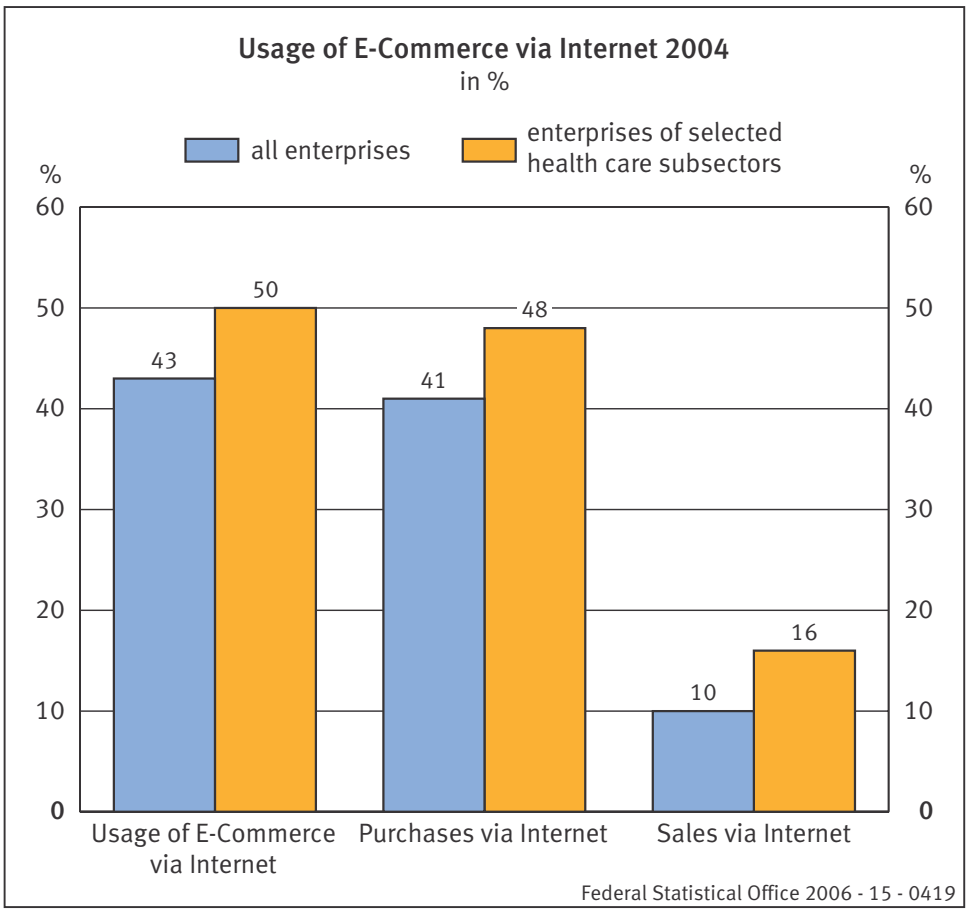
enterprises. 89% of enterprises in the health care sector had an Internet connection in 2005, and 55% also had their own website. With enterprises of all industries it was by contrast only 78% and 46% respectively.

It has already been shown in the above sections that usage of information technologies varies considerably depending on the size of the enterprise. This also applies in the selected health care subsectors: The larger the enterprises, the more frequently ICT is used. Hence, 89% of enterprises in selected health care subsectors with fewer than 20 employees had a connection to the Internet in 2005, and 54% had their own website, while of those enterprises which had between 20 and 49 employees, 99% had an Internet connection and 80% an Internet presence, and the figure was 99% and 91% respectively among enterprises with between 50 and 249 employees. In the size class with 250 or more employees, all enterprises in the selected health care subsectors used the Internet without exception, and 97% also had their own Internet site.

The enterprises of the health care sector recorded comparably greater use of E-Learning services in 2005. 27% of all enterprises in selected health care subsectors used the Internet for training and instruction, whilst the average of the enterprises of all economic activities observed was only about 15%.

Usage of E-Government services in the health care sector was, by contrast, below average in 2005. Whilst almost 30% of enterprises of all economic activities used the administration's online services, it was only 19% in the health care sector.

Figure 15



Higher than average participation in E-Commerce via the Internet by enterprises of selected health care subsectors

Participation in E-Commerce via the Internet by enterprises in the health care system increased by 3 percentage points in comparison to the previous year, and was also much higher in 2004 than the average of enterprises in all economic activities observed (cf. Fig. 15). Roughly 50% of the enterprises in selected health care subsectors actively participated in E-Commerce via the Internet in 2004. Over all economic activities, the share was 7 percentage points lower. 48% of enterprises from the health care sector ordered goods or services via the Internet in 2004, while 16% made sales online. Here, 26% of Internet sales were accounted for by sales to other enterprises (B2B) and 74% by sales to private households (B2C). A somewhat different picture was shown by enterprises across all economic activities: 39% of Internet sales were made by B2B, 61% by B2C.

On average of the economic activities participating in the ICT study (here including financial intermediation), roughly 55% of those in work worked at a computer on a regular basis in 2005, and 43% of employees also had an Internet connection. The share was much higher in the health care sector. Here, 77% of employees used a computer regularly for their work, and 48% had an Internet connection. By contrast, the share of those in work who could access their enterprise's IT systems from outside was somewhat smaller in the selected health care subsectors (11% as against 12% in all enterprises).

5. ICT usage in private households

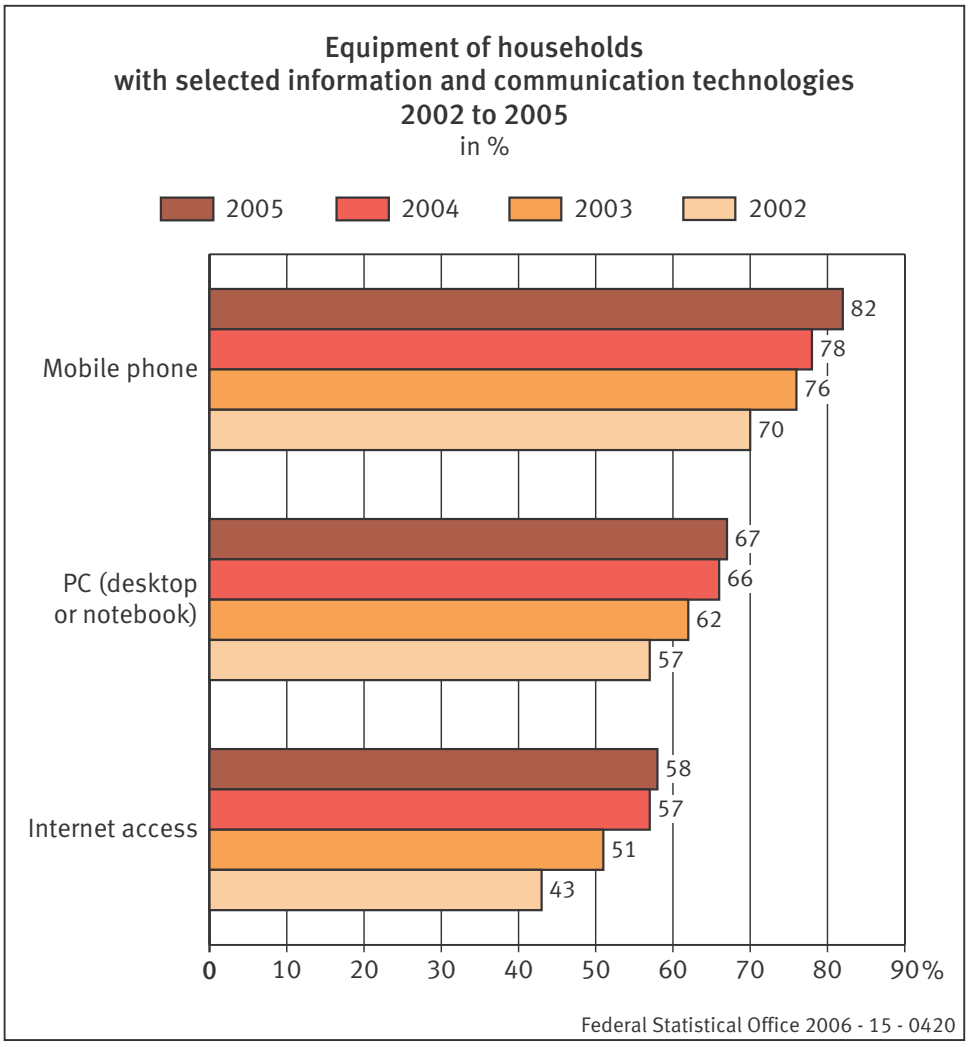
5.1 Equipment of households with information technology

The comparison carried out with other European countries – which in the same way as the results in Chapter 3 is restricted to households with at least one household member aged between 16 and 74 – shows in the context of the EU that German households have a level of equipment that is above average. A slight increase has been recorded in each case in the past few years as to equipment relating to information and communication technology. In contradistinction to the European comparison, the results of the section below apply on principle to all households, independently of the age of the household members.

An ever increasing number of households have a PC and a notebook

Here, there were indications of satiation in the area of PC equipment and of Internet access at home in 2005. 58% of households had an Internet connection at home in 2005, whilst in 2004 it was already 57%. And similar to the spread of the Internet, PC equipment also no longer increased as strongly in 2005 as it had in the preceding the years: 67% of private households had a personal computer (desktops and notebooks) in 2005. In comparison to 2004, the level of equipment thus only rose by 1 percentage point (cf. Fig. 16). If desktop PCs and notebooks are viewed separately, however, it is possible to record a considerable degree of duplication: As many as 15% of all households have both a desktop PC and a notebook (2002: 7%).

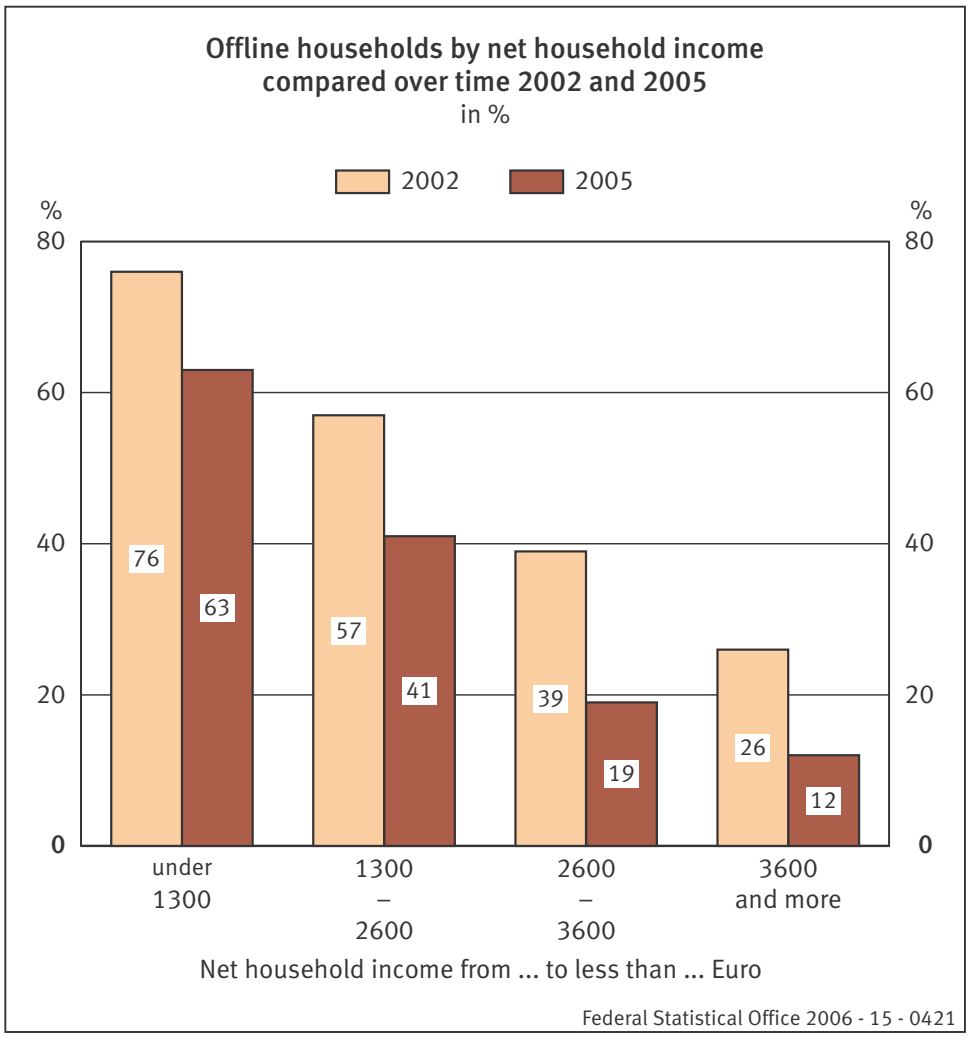
Figure 16



When it comes to equipment with mobile phones, there was another slight increase in 2005. Whilst in 2004 at least one person had a mobile phone in 78% of households, this figure was 82% in 2005. Not every person in a household has their own mobile phone, but the share of mobile phone owners increased slightly once again among the population from the age of ten upwards: 68% had their own mobile phone in 2004, as against 73% in 2005. Few smaller children under the age of ten, by contrast, had mobile phones of their own: 7% of parents gave their under-tens mobile phones.

The degree of equipment with PCs fluctuates very much with net household income. Whilst only 46% of households with a monthly net income below Euro 1300 have a PC (desktop or notebook), it is 93% among households with an income above Euro 3600. Similar differences are shown when it comes to simultaneous ownership of both a desktop PC and a notebook: Among households with an income lower than Euro 1300 it is 6% who have both, with households with Euro 3600 of income or more, by contrast, it is 42%.

Figure 17



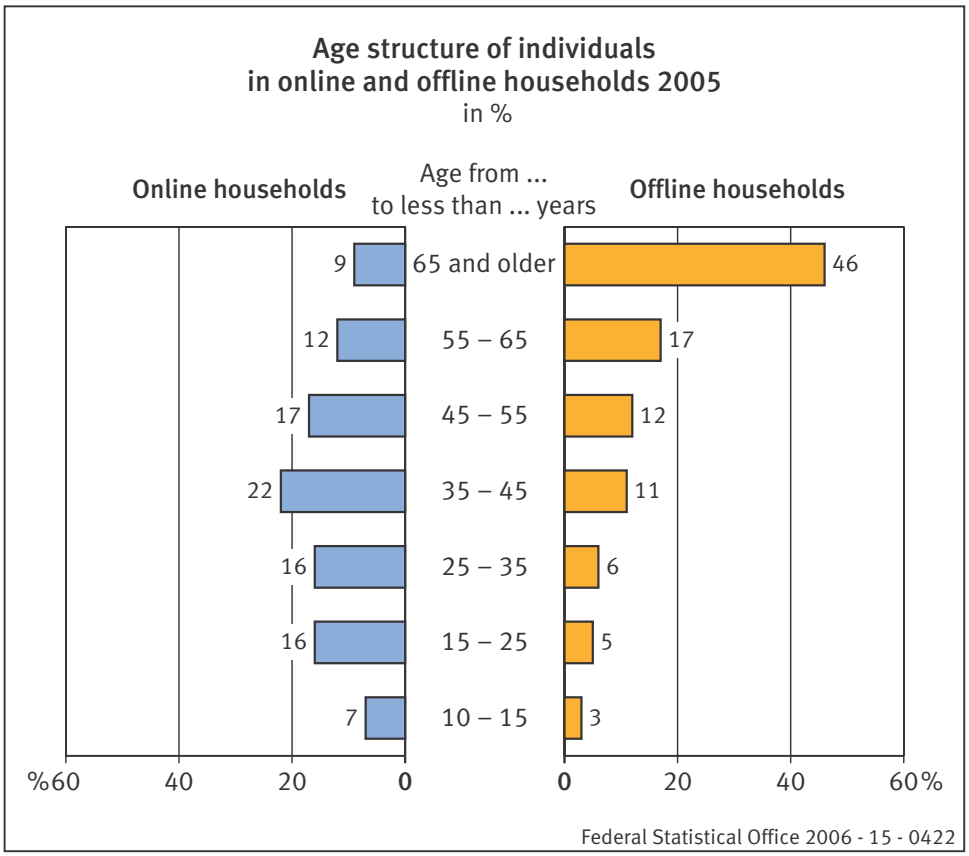
Equipment with PC and an Internet connection dependent on income

Whether households have an Internet connection at home depends on a variety of influencing factors in individual cases. 42% of all households did not have an Internet connection at home in 2005 (offline households). In this case, the share of offline households increases as net household income falls: In 2005, only 12% of households with an income of Euro 3600 or more did not have an Internet connection at home, whilst 63% of households with an income of less than Euro 1300 did not have an Internet connection.

At the same time, households with a higher income are the ones in which the offline share has fallen most since 2002: In the group of households with an income of Euro 3600 and more, the share of offline households has halved; when it comes to the low-income group of under Euro 1300 the share has only fallen by less than one-fifth (cf. Fig. 17).

The age of the household members also has a relatively strong influence on whether an Internet connection is acquired at home. Of all 10- to 24-year-olds in 2005, only 13% lived in a household with no Internet connection. Among 25- to 54-year-olds, at 20%, already a somewhat higher share had no connection to the Internet at home, whilst among persons from 55 upwards, it was as high as 59%. The age distribution of those living in online households and in offline households makes it clear that the majority of those who are offline are older: Almost half of all persons (46%) in offline households are 65 and older.

Figure 18



However, with regard to social status, there are considerable differences between online and offline households. Whilst only 19% of all those in work live in a household without an Internet connection, the share of the unemployed (41%) and above all of pensioners (63%) is much higher. The share of students in offline households is the smallest by far: Only one in twenty lives in a household without an Internet connection.

37% of low-income offline households state cost reasons against an Internet connection

A look at the reasons why those households who as yet do not have an Internet connection shows that many are evidently not convinced of the benefit of this medium: 61% of households with no Internet connection stated that they did not need it. This is hence the most frequently-stated reason not to have an Internet connection at home. Other reasons lag far behind, for example, at 28% and 29% respectively, the high connection and purchase costs, followed by the possibility of accessing the Internet

from elsewhere (27%), and lack of knowledge of the Internet (27%). Reservations because of data protection (17%) or concern about being exposed to objectionable content (9%) are by contrast only comparably seldom offered as an argument in favour of living without an Internet connection. In particular for households with a low income, purchase and connection costs are a substantial argument against the Internet: 37% of households with an income below Euro 1300 state the purchase or connection costs as a reason not to get an Internet connection. And almost one household in five states at the same time that they need an Internet connection, but has not acquired one for cost reasons.

5.2 Computer usage

By itself, the level of a household's equipment with information technology says nothing about the actual usage habits of the individual household members. Persons who do without a computer and/or an Internet connection at home may nevertheless have access to these services elsewhere. It is therefore worth taking a closer look at personal usage of PCs and the Internet, irrespective of the place of usage.

Who uses computers?

PC usage has continually grown in recent years

Usage of computers has continually increased in recent years: Whilst 61% of the population from the age of ten used PCs in the first quarter of 2002, it was already 70% in the first quarter of 2005. According to the results of the 2005 survey, therefore, roughly 52 million people from the age of ten sat at a PC at least once in the first quarter of 2005, be it privately, for work or at school or in training.

Computers still find different levels of acceptance, depending on age. As many as 97% of 10- to 14-year-olds used a computer in the first quarter of 2005, and among 15- to 24-year-olds it was also 97%. Only in higher age groups does computer usage fall slowly, "computer reticence" being observed most commonly among senior citizens: Among individuals above the age of 65, only 20% sat at a PC in the first quarter of 2005.

„Computer reticence" largely among older women

In the higher age groups, a stronger differentiation is also shown between the genders. Overall, the share of men using computers (76%) in the first quarter of 2005 is still higher than that of women (64%). Whilst up to 55 years of age, men and women are roughly equal in PC usage (cf. Fig. 19), in the age between 55 and 64 years, at 65%, many more men than women (51%) use a PC. Among the over-64s, the share of men using a PC is in fact more than twice as large (30% in comparison to 13% of women).

There are also discernible differences depending on the level of education: Only 44% of those with a secondary general school[1] certificate used a computer in the first quarter of 2005; among individuals with an intermediate school certificate the figure is 77%, and as high as 87% among those with university entrance qualification.

Computer usage in a time comparison

Marked increase in computer usage in medium and older age groups

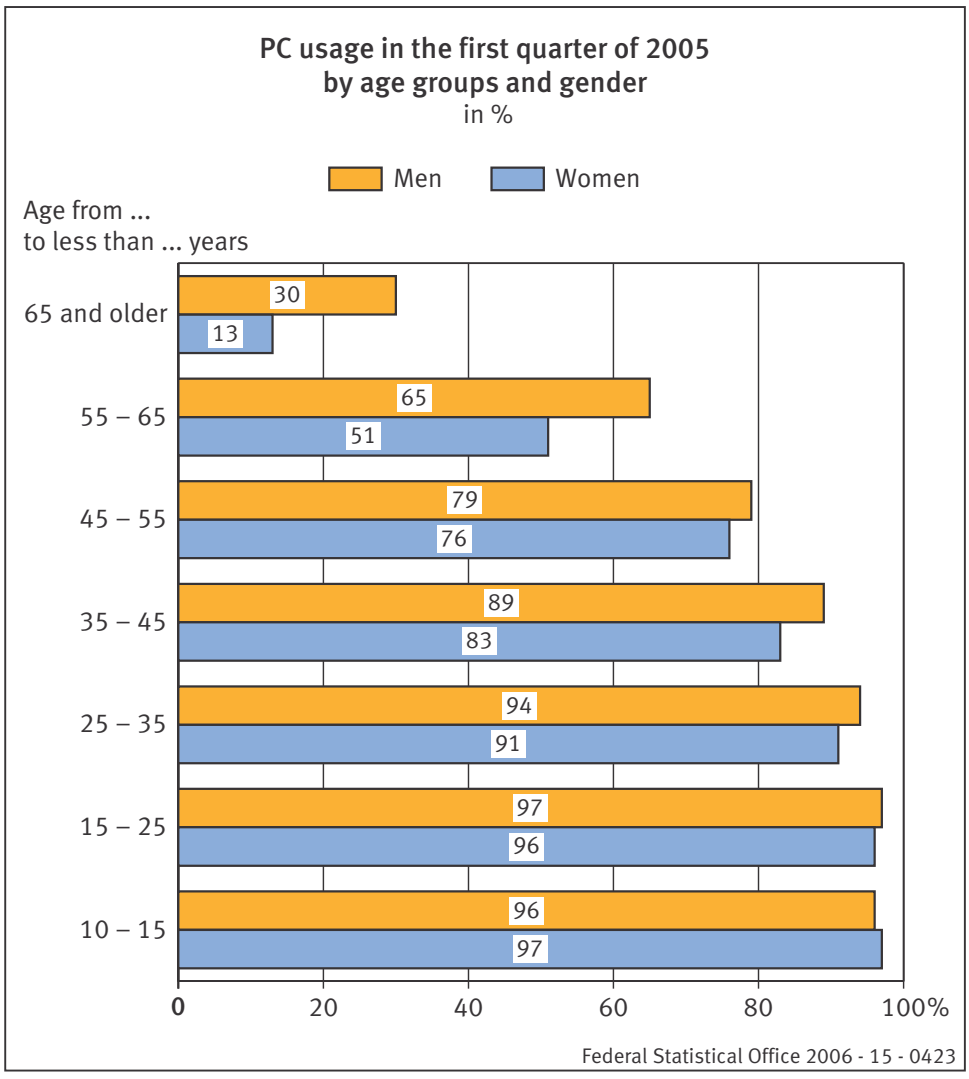
Whilst in the past two years in particular comparatively slight increases can be observed from a high starting point among the younger population under the age of 25 (from 91% in 2002 to 97% in the first quarter of 2005), there is considerable growth in the medium and older groups of individuals. Thus, the share of computer

[1] In Germany, the secondary general school certificate (Hauptschulabschluss) is obtained after 9 years of school, the intermediate school certificate (Realschulabschluss) after 10 years. The university entrance qualification (Abitur) is reached after 12 or 13 years.

users among 25- to 54-year-olds has grown by 11 percentage points since 2002, and by 10 percentage points among the over-54s.

Here, those groups of persons also increasingly used computers who did not have to deal with a PC at work or by virtue of training. Hence, for instance 57% of unemployed people used a PC in 2002, and it was 71% in 2005. A similar picture emerges for retirees (increase from 19% in 2002 to 30% in 2005) as well as among housewives and house husbands (from 42% in 2002 to 51% in 2005).

Figure 19



5.3 Internet usage

87% of PC users also on the Web

PC and Internet usage is very much linked. If the possibility exists to access a computer, this normally includes an Internet connection. Here one can observe that those persons who exclusively use a PC whilst not going online are becoming fewer and fewer: Whilst in 2002 three-quarters of all PC users also used the Internet, in 2005 it was as many as 87%. All the figures below, in contradistinction to the results in the European comparison, relate to persons from the age of ten.

Internet usage among the population from ten upwards increased by 15 percentage points since 2002

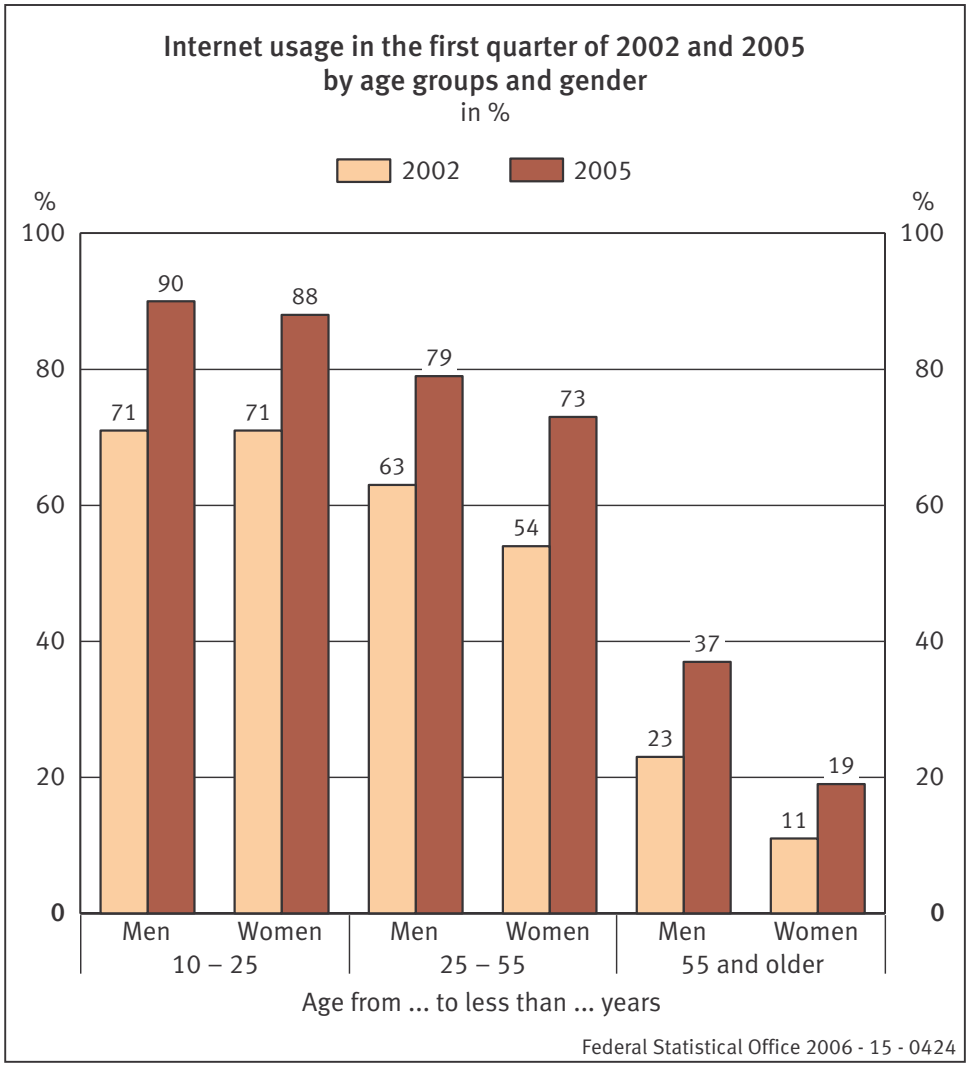
An increase in Internet usage can still be observed: In the first quarter of 2005, 61% of the population from the age of ten, accounting for roughly 45 million people, used the Internet at least once for private or work purposes or at school and in training. It

was 58% in 2004, but only 46% in 2002. Hence, the goal announced by the Federal Government in 2003 in the Action Programme "Informationsgesellschaft Deutschland 2006" (Information Society Germany 2006) to increase the proportion of Internet users in the over-14 population to 75% has come a little closer. If only the group of 14-year-olds and older is surveyed on the question of whether they have ever used the Internet, the share is 66% in 2005.

5.3.1 Who uses the Internet?

Another goal pursued in the Federal Government's abovementioned 2003 Action Programme was equal or equivalent Internet participation by women, since gender-based differences are also highly evident in Internet usage: 68% of men surfed the Internet in the first quarter of 2005, whilst with women this figure was only 55%. There was also a similar difference in the previous years. Therefore there is no evidence of a closing of the gap between the genders as to Internet participation.

Figure 20



Marked differences in male and female Internet participation from the age of 55

The additional observation of the age of men and women using the Internet in Figure 20 however makes it clear that the target of equal Internet participation has almost been achieved, at least in the younger age groups. There is practically no longer any difference among the under-25s. The difference is however pronounced

among the over-54s: 37% of users among men are compared here with 19% of female users. One can thus observe the same effect of age and gender with Internet usage as with PC usage.

99% of students online, but only 22% of retirees

All in all, however, the Internet is a medium which is still largely used by the younger. For instance, 89% of the under-25s went online in the first quarter of 2005, but only 14% of the over-65s. Students in particular lead the field when it comes to Internet usage (99%), followed by school pupils from the age of 15 (95%), as well as apprentices (92%). School pupils and apprentices have only added 2 percentage points each in comparison to the previous year. Only 22% of retirees use the Internet (2004: 18%).

5.3.2 Who is "offline"?

The above section provided a brief description of who is using the Internet. Who, by contrast, are the persons who continue to keep their distance from the Internet? Is it possible to identify specific groups within the population who are not reached by the medium of the Internet, and perhaps will not be reached in the future, and maybe do not want to be?

Four-fifths of over-65s, but only 6% of under-25s are offline

The group of those who are offline, i.e. those who did not use the Internet either in the first quarter of 2005 or ever before, includes a particularly large number of elderly people. 82% of the over-65s have never been on the Internet. For comparison: Among under-25s it is only 6%. Accordingly, the share of pensioners, at 73%, is almost five times as high as among those in work (16% of those in work have never been on the Internet).

The level of education also plays a role: The lower the qualification level, the greater is the reticence towards the Internet: 58% of those with secondary general school certificate are "offline", as against only 14% of people with university entrance qualification. Over and above this, Internet usage is also a matter of income: The lower the monthly net income, the higher is the share of those who are offline in the respective income group. 12% of those with a personal net income from Euro 3600 upwards were "offline"; among those with an income under Euro 1300 it was 39%.

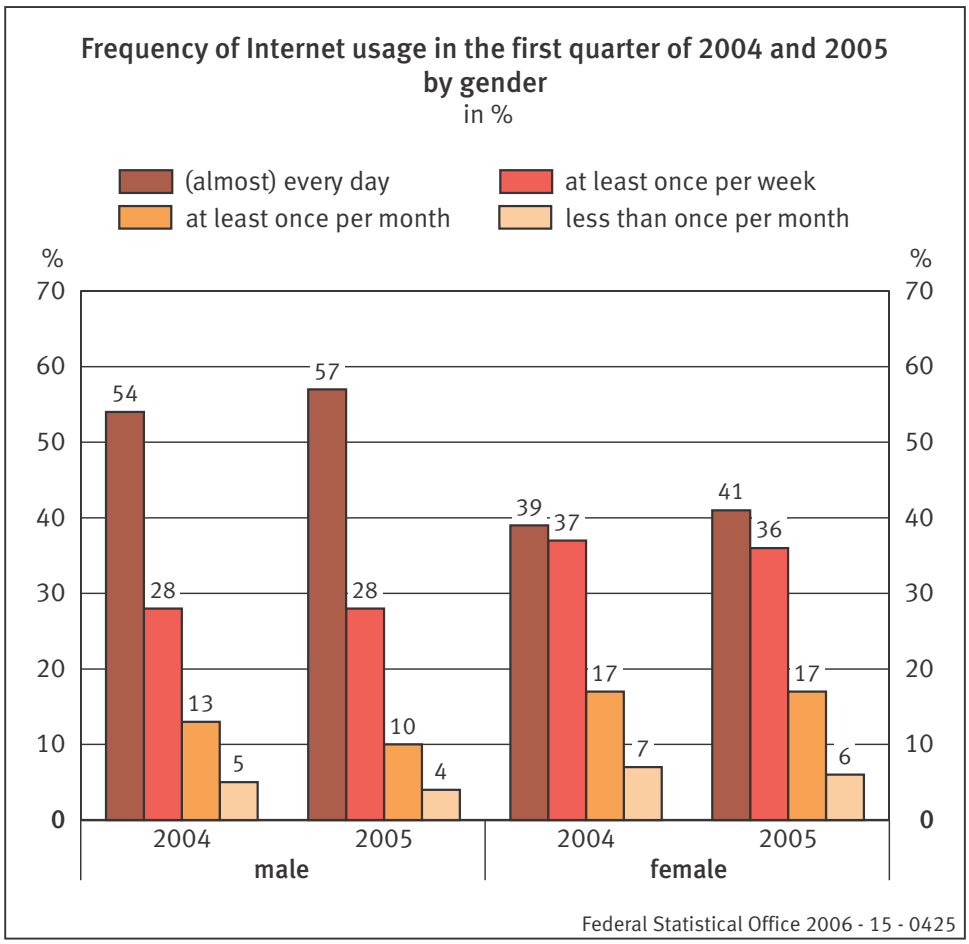
5.3.3 How intensively is the Internet used?

57% of male and only 41% of female onliners go online almost every day

One Internet user in two (50%) went online every day or almost every day for work or private reasons in the first quarter of 2005; another 32% did so at least once per week, but not on a daily basis. There has therefore been a slow, but constant trend towards more frequent usage since 2003: The share of daily users was 46% in 2003. The same gender-specific usage patterns are shown in the case of usage intensity as in the previous years: In particular with (almost) daily usage, men who use the internet at 57% are far above the share of women (41%). The spread is diametrically opposed when it comes to men and women who use the Internet less than once per week: 23% of women, but only 14% of men, place themselves in these categories.

Similar gender-specific patterns as with frequency of usage are also shown when it comes to duration of usage. 36% of Internet users were only online for a maximum of one hour per week in 2005, this being 43% of women who used the Internet, but only 29% of men who used the Internet. On the other hand, another 24% of all Internet users also spent more than five hours per week on the web: 30% among men, but only 16% among women.

Figure 21



Students surf longest

The duration of usage is also closely linked to respondents' personal situation. Above all it was younger people who showed a particularly long duration of usage in the first quarter of 2005. For instance, 51% of students who use the Internet, 33% of school pupils and 29% of apprentices were online for six or more hours per week. Conversely, only 11% of students spend one hour or less per week on the web, which by contrast applies to 51% of housewives and house husbands and 44% of retirees.

5.3.4 Where is the Internet used?

87% of those online also surf at home

Internet connections at home are used the most frequently by far. 87% of all Internet users also went online from home in the first quarter of 2005, and somewhat more than half of these individuals exclusively use this channel. 17% of all those online use an Internet connection at their place of training, i.e. school or university, or a connection at friends' or relatives' homes, to surf the Internet. Other places where Internet access is available, such as Internet cafés or Internet PCs in public facilities, play a minor role, at least in Germany.

More than one Internet user in four however also accesses the World Wide Web at work. It is noticeable that only a small number of these individuals (16%) goes online only at work. The greatest share by far (84%) additionally goes online from other places, such as from home. Of those in work, one in two went onto the Internet from work in the first quarter of 2005. There are major discrepancies here as to status at work, which however is likely to be attributed to a considerable degree to the tasks to be done at work: Whilst civil servants and salaried workers, at 56%, went online at work more often than the average, among wage-earners it was only 18%.

77% of students using the Internet go online at university, 59% of school pupils using the Internet went online at school in the first quarter of 2005, and 46% of apprentices surfed the Internet at their place of training. It is interesting that the share of those who went online exclusively at their place of training is very low. Only 8% of school pupils, students or apprentices who use the Internet at their place of training only do so there, whereas the vast majority (86%) also surfs the Internet at home.

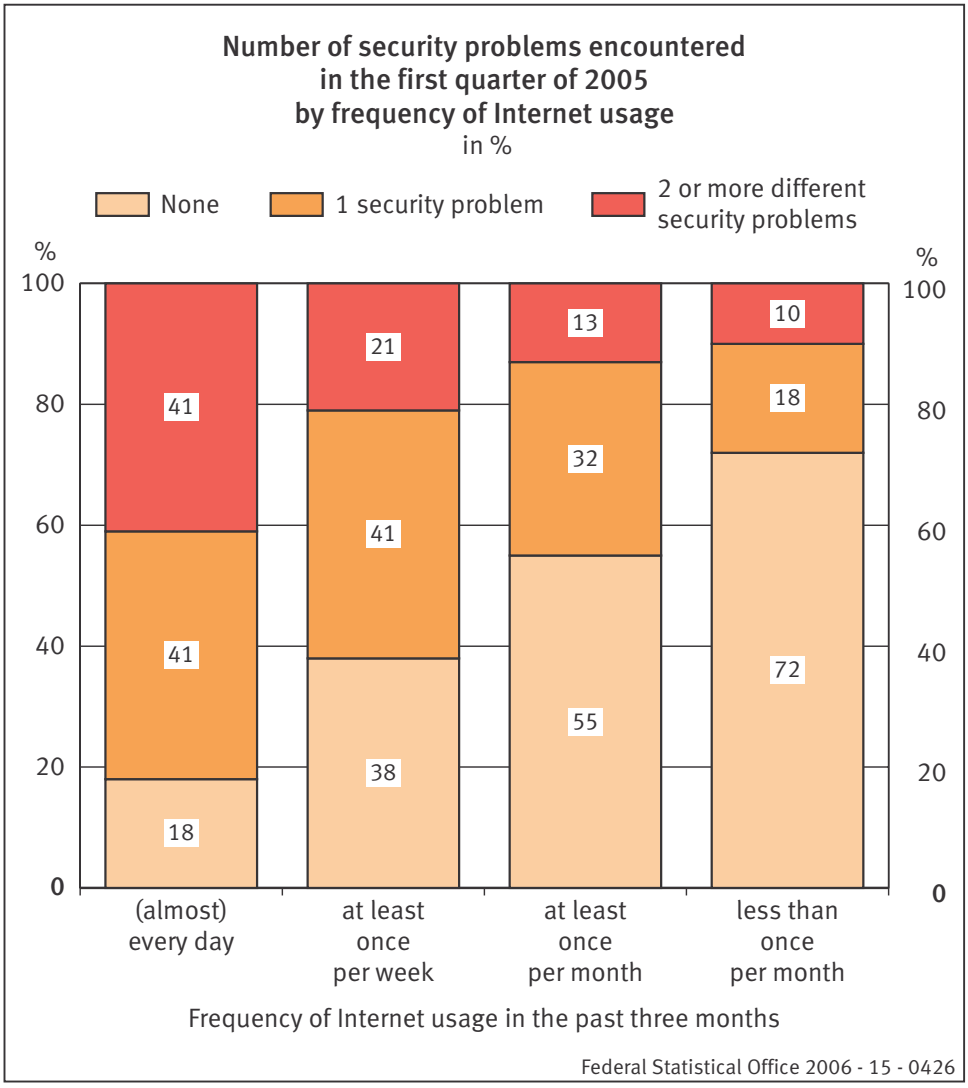
77% of students also went online at their place of study

5.3.5 How secure is private Internet usage?

According to individual information, a total of 66% of internet users encountered at least one of the following five (security-related) problems in the year prior to the questionnaire: Their PC was attacked by a virus, they had identified misuse of personal information or credit cards, they had been sent unwanted e-mails, so-called spam, or other unspecified security problems had occurred. A closer look however reveals that spam accounts for the lion's share of these difficulties: As many as 58% of Internet users state that they had received unwanted e-mails. A virus had occurred among 33% in the same period. By contrast, misuse of personal information or misuse of credit card information was almost never named.

33% stated that they had had a virus on their PCs, 50% received spam

Figure 22



The more frequently people surf on the Internet, the more frequently different security problems occurred (cf. Fig. 22). 41% of Internet users who are on the web every day or almost every day reported at least two different security problems. Of those who use the Internet only once per week, only 21% stated that they had to deal with two or more security problems. Among those surfing less than once per week in fact only 13% experienced anything of this nature. A similar situation can be recognised if the length of the time spent on the World Wide Web is considered. Almost 17% of those who are on the web at most one hour per week, but 32% of those who surf for up to five hours per week, and 42% of those who are on the web for more than five hours per week, stated that they were confronted with several security problems.

Not only the number, but also the nature of the problems depends on the duration of usage: The more time is spent on the Internet, the more frequently do problems such as virus attacks or spam occur. Whilst only 23% of "infrequent surfers" (one hour or less per week) had a virus on their PC in the year before the questionnaire, among "frequent surfers" (more than 20 hours per week) it was 50%. In the case of spam, however, those who did not use the web for so long also suffered considerably: 43% of those spending up to one hour online per week received unwanted e-mail advertising. 84% of Internet users spending 20 hours and more per week online are confronted with this phenomenon.

Only 7% go online at home with a PC with no security features

Confrontation with these risks has however also led to a situation in which the lion's share of those using the Internet has an Internet connection at home which is protected with appropriate software. As many as half those who used the Internet at home in the first quarter of 2005 had both an anti-virus program and a firewall installed on their domestic PC. Another 32% do not have a firewall on their home PCs, but do have an anti-virus program. Only 7% have neither one nor the other installed on their private PCs.

5.4 Skills and knowledge in using computers and the Internet

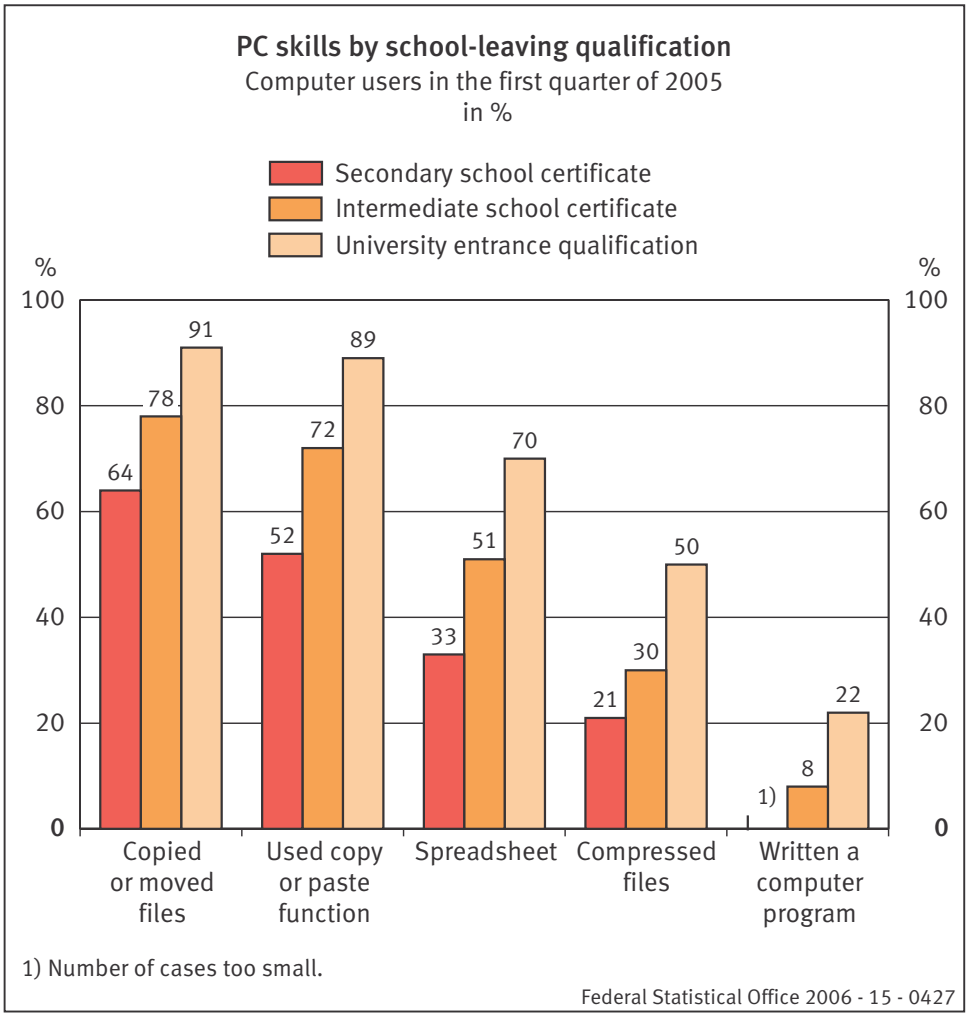
The modern world and the work environment is virtually unimaginable without computers and the Internet: They have entered almost all areas of public and private life. More than three-quarters of the population from the age of ten have already used a PC once, 70% in the first quarter of 2005 alone. Two-thirds have already been on the Internet, 61 % in the first quarter of 2005. In 2003, the Federal Government explicitly set targets in the shape of the Action Programme "Informationsgesellschaft Deutschland 2006" (Information Society Germany 2006) going beyond the mere dissemination of the new media, aiming to heighten the skills of the population to use PCs and the Internet. This is also made clear by many initiatives, including in cooperation with or under the patronage of various Federal Ministries. For instance, the joint initiative "Frauen ans Netz" (Women Go Online) of Deutsche Telekom AG, the Federal Employment Service and the magazine "Brigitte"; the "Jugend ans Netz" (Youth Goes Online) and "Online-Kompetenz für die Generation 50plus" (Online competence for the over-50s) initiatives of the Federal Ministry for Family Affairs, Senior Citizens, Women and Youth; or indeed the "Digitale Chancen" (Digital Opportunities) foundation under the patronage of the Federal Ministry of Economics and Technology. What particular activities were carried out in the first quarter of 2005, and by what means was the requisite knowledge (so-called E-Skills) acquired?

5.4.1 Activities on the computer and on the Internet

The spectrum of activities carried out on PCs or on the Internet ranges from simple techniques, such as using a mouse, through to challenging programming far beyond

everyday applications. It can be observed among PC users in the first quarter of 2005 that basic techniques such as copying, moving or pasting files or text passages are part of the repertoire for more than 70% of people. And one in two (50%) has the skills for dealing with spreadsheet programs (such as Excel). Files are compressed more seldom (33%), and only 11% have already written a computer program themselves.

Figure 23



Activities at a PC dependent on level of education

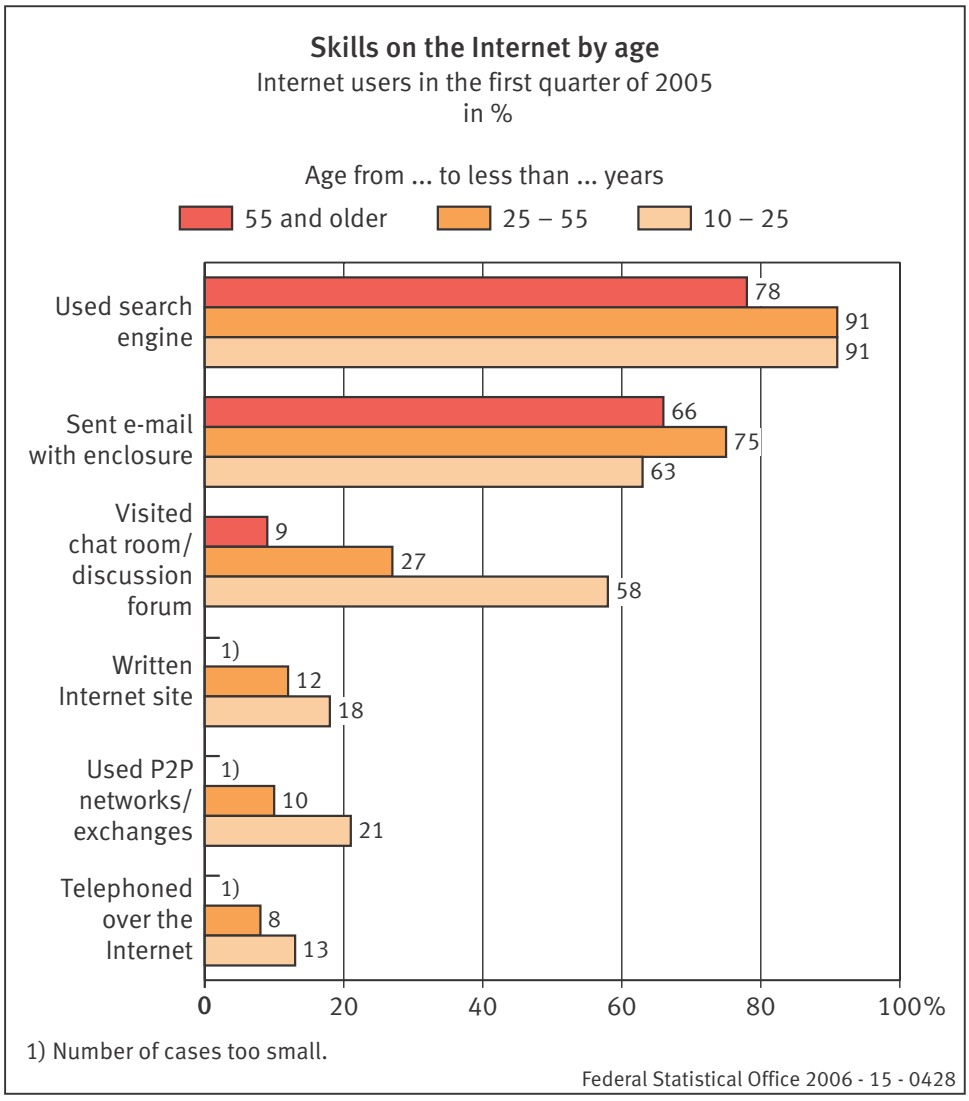
Use of the PC is determined by educational background much more than for instance by age or gender (cf. Fig. 23). This is already noticeable in basic activities, such as copying or moving files, which 91% of computer users with a university entrance qualification can manage, this applying however to only 64% of those with a secondary general school certificate. This effect is further amplified with regard to the less everyday use of computers, such as usage of spreadsheet programs (70% as against 33%) or writing one's own programs, which – presumably also as a result of work – is much more frequently done by persons with a university entrance qualification.

Nine out of ten onliners use search engines, 11% use exchanges

With activities on the Internet, the use of so-called search engines takes the top position – 89% of Internet users used corresponding Internet services in the first quarter of 2005 – followed by sending e-mails with enclosures (70%). As many as one in three already has experience with "chatting", or has visited a discussion forum, this being more popular among the young. 58% of those under 25, and 27% of Internet users between 25 and 54, have used such services, but only 9% among those over-55s. Users comparatively seldom write their own Internet pages (13%) or use exchanges to swap music files (11%). And only 9% telephone via the Internet. The

three latter activities are also primarily a matter for younger members of the online community. As many as 21% of the under-25s have used an exchange once, whilst 18% have written an Internet site; this does not play a significant role among older Internet users.

Figure 24



5.4.2 Acquisition of PC and Internet skills

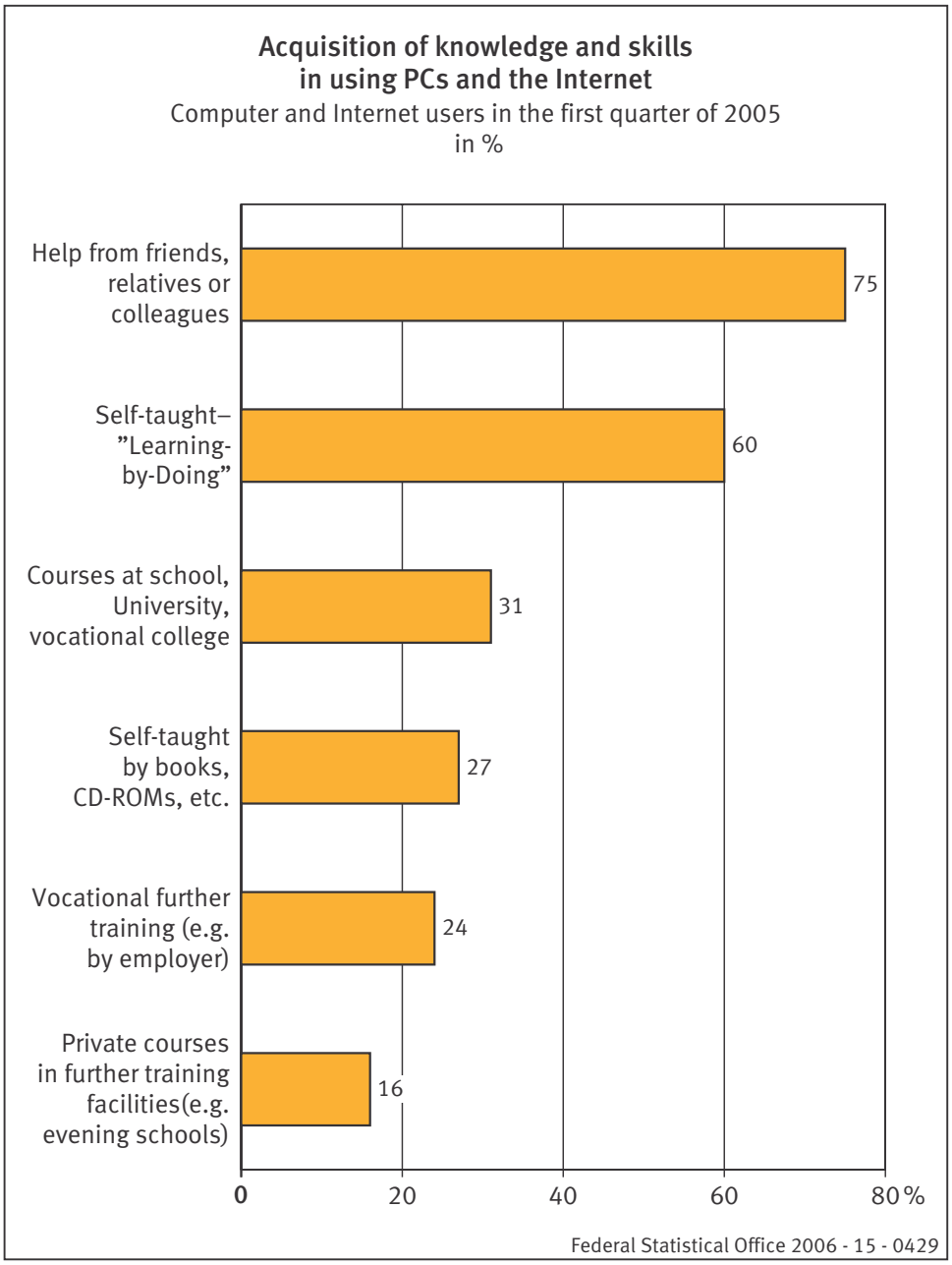
The most important sources of information for PCs and the Internet: friends, acquaintances and colleagues

How are E-Skills, in other words the knowledge needed to use PCs and the Internet, obtained? The most important source is assistance from friends, colleagues and relatives: Three-quarters (75%) of those who used either computers or the Internet in the first quarter of 2005 gained their skills with the assistance of others. 60% obtained the skills by themselves through "Learning-by-Doing". The acquisition of knowledge in the more institutional context, be it in training or professional further training or at private courses (cf. Fig. 25) lags far behind. 27% used other media, such as books, CD-ROMs and the like.

Knowledge and skills for PCs and the Internet have not as a rule been acquired from one source only: Only one-quarter (24%) of those who used a PC or the Internet in the first quarter of 2005 have received their knowledge solely from the stated source, and mainly fell back on support from their circle of friends. The vast majority uses

information from a variety of contexts. The most frequent scenario is that individual experimentation is supplemented with the assistance of acquaintances: 47% of those who use more than one source when acquiring knowledge states this combination.

Figure 25



It is evident that it is above all the younger population, aged from 10 to 24, who practice PC and Internet usage in training: 58% attend appropriate courses at school or university, as against “only” 12% of the over-54s. The elderly in particular are more reluctant to try things out – 44% obtain the necessary knowledge themselves, of the younger more than 60% try this path. By contrast, the elderly tend to avail themselves of private courses in further education facilities (such as evening schools) in order to equip themselves for the “information society” (27% as against 5% of under-25s). All in all, men take more initiative: 66% practice “Learning-by-Doing”, 35% use reference material or CD-ROMs; among women it is 53% and 17% respectively. Women, by contrast, consider it more important to learn together at a school, university, etc. (34%) or in private courses (19%; men: 29% and 13% respectively).

Women are more likely to attend courses for PC and Internet use, whilst men act on their initiative

5.5 E-Commerce: Shopping via the Internet

E-Commerce, i.e. trade over the Internet, is one of the European Benchmarking indicators with which implementation of the "eEurope 2005" Action Plan is tested. The indicator refers here from economic points of view above all to sale via the Internet from an enterprise point of view (more detail on this in Chapter 4). In the case of private users, sale over the Internet however plays a comparatively minor role, while online shopping is much more significant.

5.5.1 Shopping via the Internet

Participation in E-Commerce has considerably increased as against 2002

As shown by Figure 26, buying and ordering goods and services on the Internet has become much more significant since 2002. 46% of Internet users have bought something on the Internet at least once in the first quarter of 2005 (this is roughly 21 million people), and another 18% have not done so in the first quarter of 2005, but at an earlier time. Only 33% of Internet users shopped on the Internet in the first quarter of 2002.

The following analyses refer exclusively to online buyers, i.e. persons who used the Internet during the first quarter of 2005 and bought something on the Internet at least once in the past 12 months.

Printed matter comes in first in online purchases, before clothing, films, music and video recordings

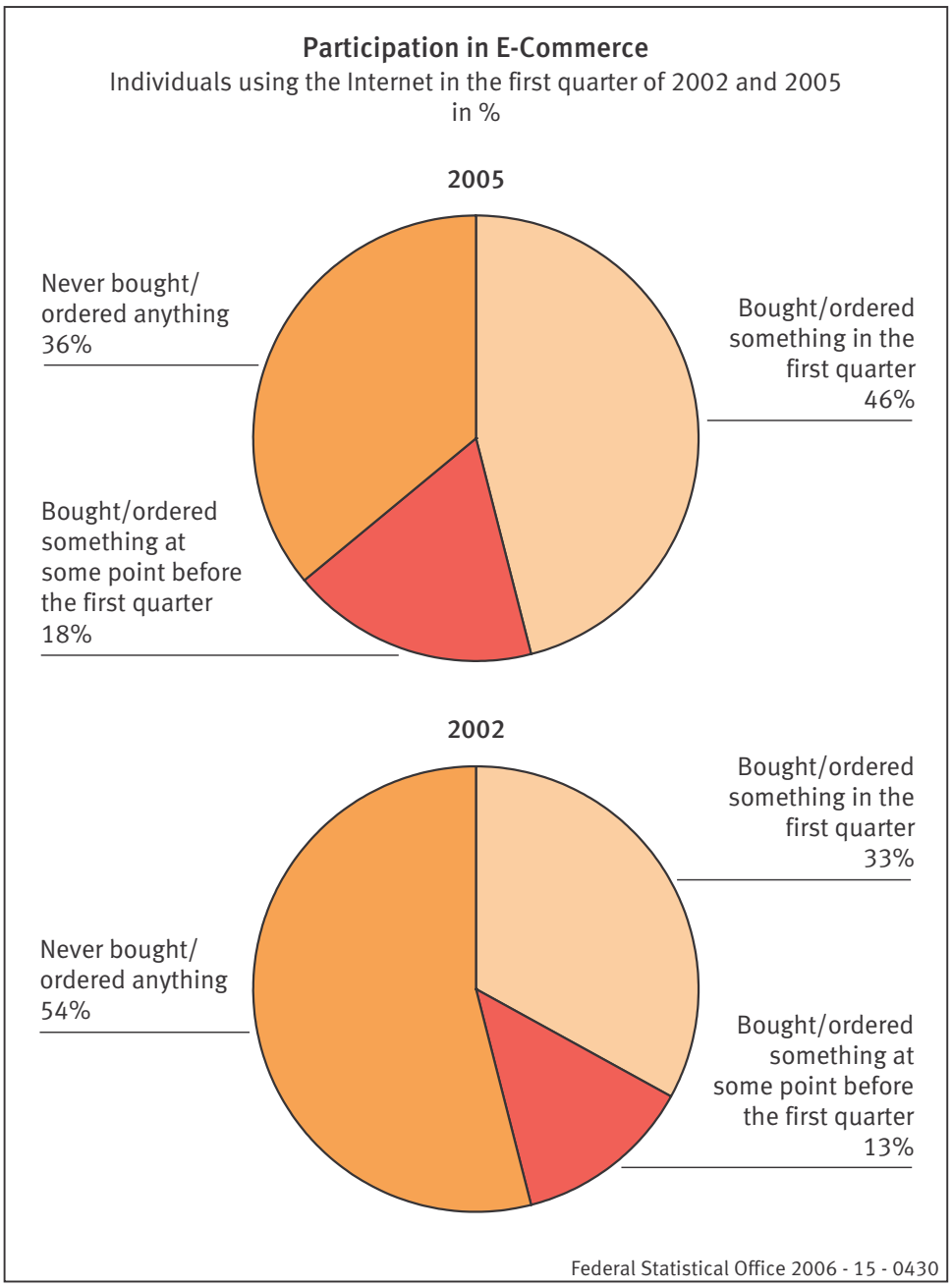
By far the most popular items for Internet purchases are printed matter, such as books or periodicals. 40% of online buyers bought such products on the web in the past twelve months prior to the questionnaire (cf. Fig. 27), this share having remained almost constant in comparison to the previous year (2003: 40%, 2004: 42%). Purchases of clothing (34%) come in at second place among German Internet buyers, followed by films, music, audio and video recordings (26%) as well as household goods, furniture or toys (26%). 23% of online buyers ordered travel services such as hotel reservations or railway tickets; there is particular growth in this area in comparison to 2004 (17%). An increase of 12% in 2004 to 17% in 2005 is also observed with event tickets ordered online. In this case, the popularity of ordering tickets for the Football World Championship certainly could have played a role. This presumption may be confirmed by the fact that 57% of those who ordered tickets did so only once. The online purchase of medicines, by contrast, plays a relatively minor role (6%).

The share of online buyers purchasing a specific product group says nothing about how frequently specific products were bought via the Internet. In fact, the frequency of orders varies considerably between the product groups. Lotteries and bets are used particularly frequently, i.e. for instance online lottery on the Internet. Only 6% of Internet buyers used this service, but they did so all the more frequently: On average in the last twelve months prior to the questionnaire, each of them played lottery online eight times (or ordered a lottery slip, placed a sports bet, etc.). Also financial services are very frequently transacted via the Internet, on average five times in the last twelve months. This is however also only a rather small group of online buyers (not quite 5%). Products such as books or clothing, which were bought by a large section of online buyers, were by contrast only ordered roughly three times each in the past twelve months, in other words comparatively less frequently. Sports or electronic articles were in fact ordered less than twice on average in the past year.

One-third of online purchasers orders from suppliers which they only know from the Internet

35% of online buyers bought exclusively from suppliers which were known to them from the Internet, or which only exist on the Internet. 33%, by contrast, only bought from suppliers online which they already knew independently of the Internet, such as mail order or department stores or other enterprises which also have conventional

Schaubild 26



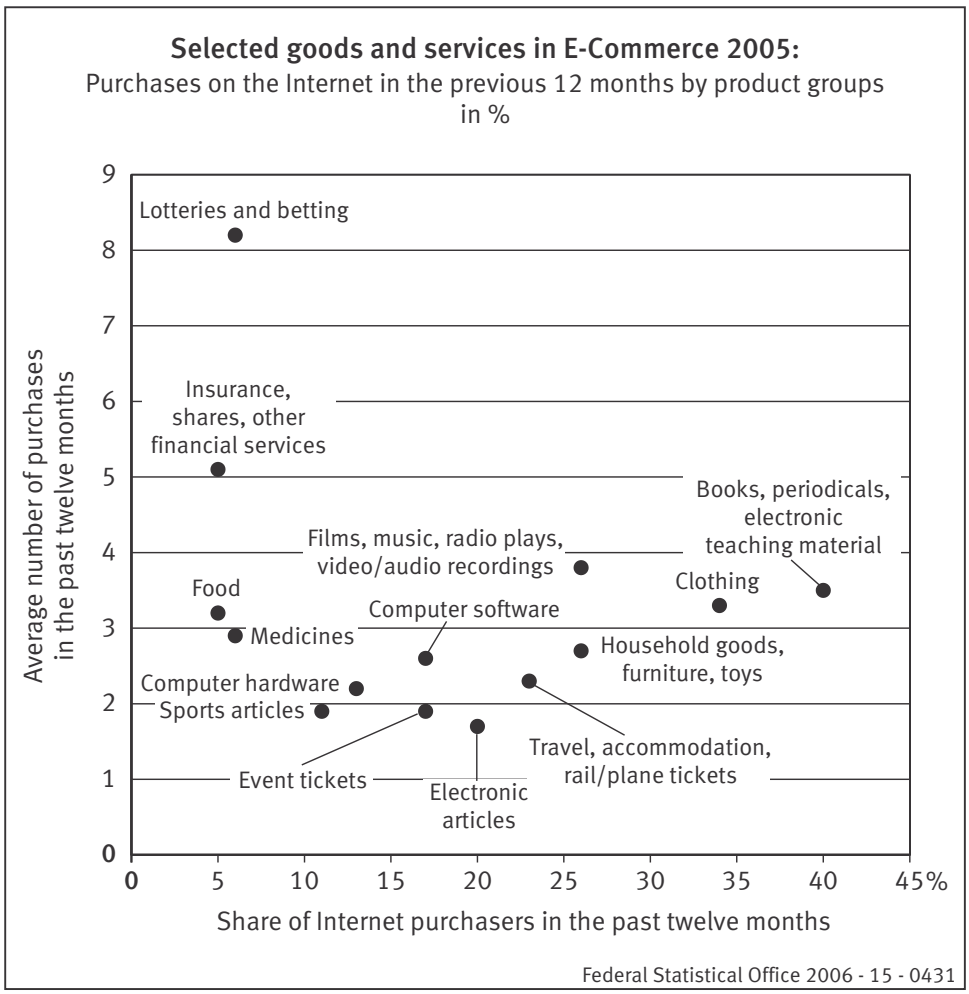
shop premises. The other third of buyers opted to order from enterprises which were known to them via the Internet, and from others which were known via classical mail order.

5.5.2 Who buys on the Internet?

Students', housewives' and househusbands' participation in E-Commerce is above average

All in all, 46% of the online community bought or ordered something on the Internet in the first quarter of 2005. As with general Internet usage, E-Commerce is also particularly frequently used by students. 66% of students using the Internet bought something on the Internet in the first quarter of 2005. But housewives and househusbands are also among those who like to buy things online: 55% did so in the first quarter of 2005. And as with many other aspects of Internet usage, pensioners

Figure 27



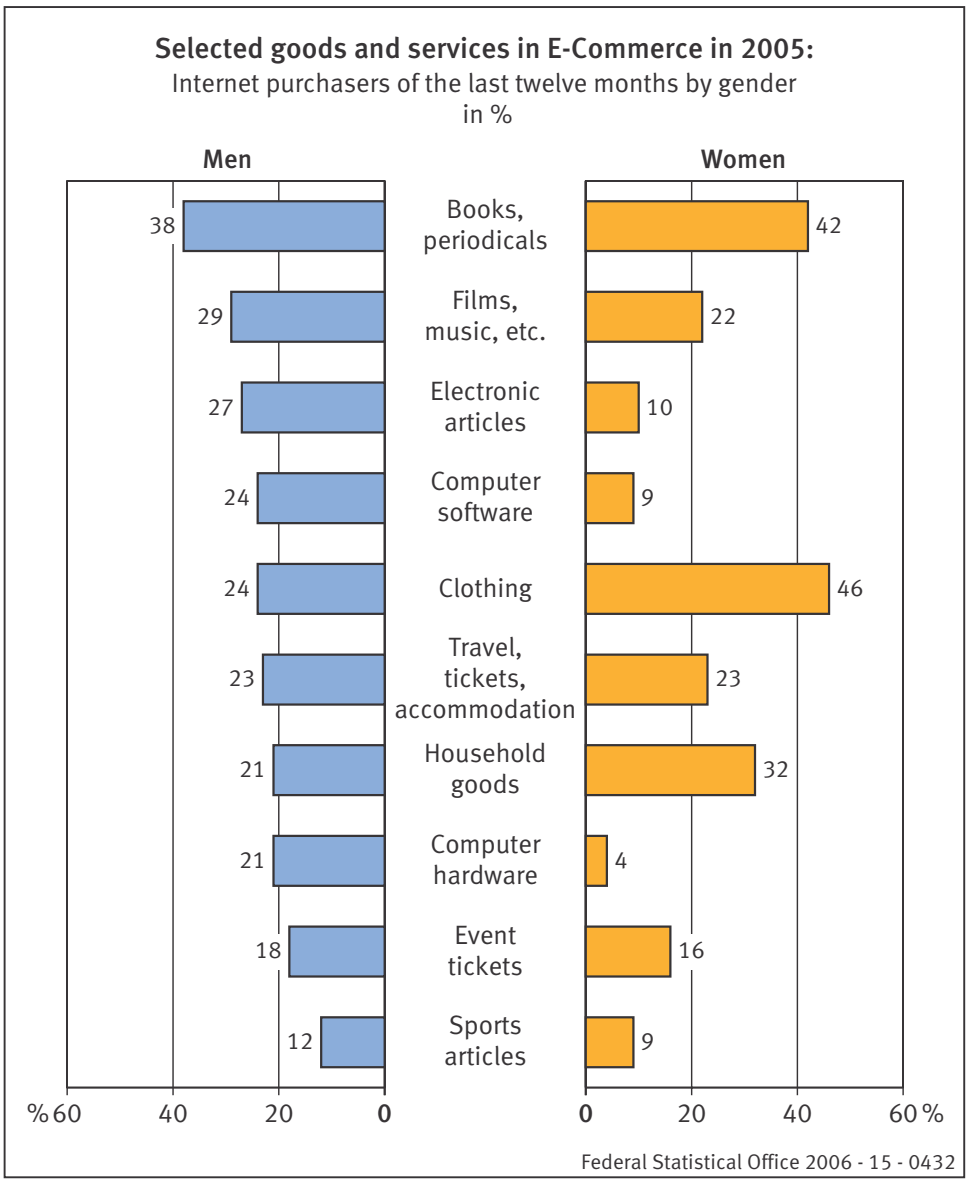
are also rather reserved when it comes to E-Commerce (40% of pensioners using the Internet shopped online in the first quarter of 2005). Men were rather more frequently represented shopping on the web than women: One man in two who used the Internet (50%) and 41% of women who used the Internet ordered goods or services on the web at least once. Men and women however bought the various goods groups to very different degrees in some cases (cf. Fig. 28).

Men buy computer and electronic articles, women tend towards clothing and household goods

Product groups which were ordered by men in particular are electronic articles, as well as products related to computers. In relation to this goods group, the share of male online buyers is in each case three to five times as large as that of women shopping online. Women, by contrast, are clearly ahead when ordering clothing, as well as household goods, on the Internet. Their share is almost twice as high as that of men when it comes to online shopping for clothing (46% as against 24%). With the most popular product in the online shopping area, however, namely books and periodicals, men's and women's shares are equal, as they are with booking travel services or purchasing tickets on the Internet.

In relation to the product range, there are also differences as to the personal situation. Those pensioners who have found their way to the web and online shopping bought books (44%) and travel services (30%) to an above-average extent. Housewives above all buy household goods, furniture or toys (43%), as well as clothing (44%). Students are far ahead when it comes to ordering books: Whilst 40% of the online community ordered books, among students it was 66%. However, also films and music are bought by students to a higher-than-average extent (40%; total 26%).

Figure 28



5.5.3 Problems with online shopping

11% of online purchasers had difficulties with orders or deliveries

Almost half of all Internet users bought or ordered something on the Internet in the first quarter of 2005. Of the group of online buyers, only 11% were confronted with problems with ordering or delivery. The question arises as to whether this specific type of shopping possibly also entails specific problems in contrast with "normal" ordering from mail order. This is evidently not the case: The most frequently named problem was delayed delivery. 5% of online customers stated that the delivery time was longer than notified. Other problems such as delivery of damaged goods (3%) or problems with returns or complaints (2%), are even rarer. However, these are difficulties which may also occur with classical shopping via mail order. Specific problems which for instance are entailed by payment transactions via the Internet tend to occur even less frequently: Security shortcomings actually occurring in payment transactions are practically insignificant. General mistrust of the medium "Online Shop" is hence likely to be unfounded.

The main problem is late delivery; lack of security in payment transactions are negligible

5.5.4 Reasons for not shopping on the Internet

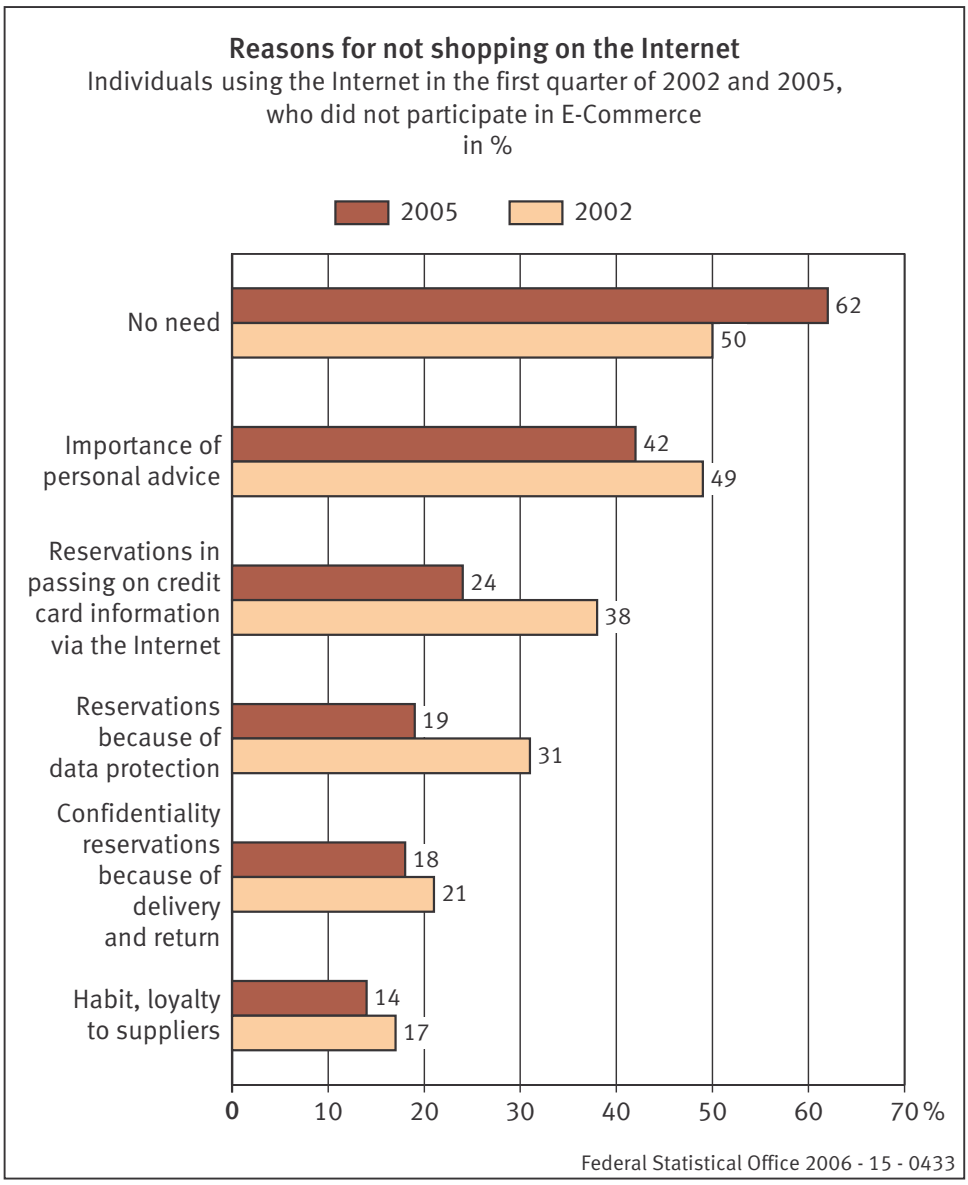
Only 36% of Internet users in the first quarter of 2005 have never bought or ordered anything on the Internet. What reasons do this group of individuals have for not buying online?

The main reason for not shopping online is a lack of a requirement

The most important reason by far is that they generally do not see a need for online shopping. 62% of onliners who have never bought anything on the Internet stated this as a reason. The share of persons who stated this reason has increased markedly since 2002 (50%). By contrast, the wish to personally inspect articles is still a major reason not to buy online for 42%, but it has become less significant in comparison to 2002 (49%), as have other reasons. Whilst in 2002 38% still had reservations as to passing on credit card information, this applies to only 24% in 2005. This means that one non-online buyer in four fears misuse of the credit card information, but – as already described in Chapter 5.5.3 – this virtually never occurs in practice. Reservations in respect of data protection fell from 31% to 19% in the same period.

All in all, the general trend is that specific reservations linked with the medium of the Internet as to shopping (data protection, payment security) are becoming increasingly rare, possibly following an individual's own positive experience or the positive experiences of others. The group of those who do without online shopping – as suggested by the results – is increasingly reduced to those Internet users who see no need for it.

Figure 29


Reasons for not shopping on the Internet
Individuals using the Internet in the first quarter of 2002 and 2005, who did not participate in E-Commerce
in %
2005
2002
No need
62
50
Importance of personal advice
42
49
Reservations in passing on credit card information via the Internet
24
38
Reservations because of data protection
19
31
Confidentiality reservations because of delivery and return
18
21
Habit, loyalty to suppliers
14
17
0
10
20
30
40
50
60
70 %
Federal Statistical Office 2006 - 15 - 0433

Overview 1: ICT-relevant two-digit number classifications from the Statistical Classification of Products by Activity in the EC (CPA)

Annex A

Number	Type of product
30	**Office machinery and computers**, excepting: purely mechanical office machinery for typing, printing and sorting, including installation of office machinery and computers
31	**Electrical machinery and apparatus n.e.c.**, but only power sources, coaxial cable, optical cable, flash bulbs and alarms
32	**Communication equipment and apparatus, radio, television, other electronic components**, excepting: repair, maintenance and installation of these products
33	**Medical instruments**, but only X-ray and electrodiagnosis appliances; **Precision instruments**, excepting: precision scales, drawing instruments, simple length meters, densimeters, non-optical microscopes, as well as parts and accessories, repair, maintenance and installation of precision instruments; **Optical instruments**, but only optical fibres and optical elements, lenses and filters, photographic and film devices and appliances, as well as parts and accessories therefor;
22, 24, 25, 35	**Publishing**, but only duplication of recorded picture carriers **Chemicals,** but only unrecorded sound, picture and data carriers **Rubber and plastic products**, but only supply of parts made of plastic for electrical goods **Other transport equipment**, but only start devices for aviation and space vehicles, space vehicles and parts therefore without launch vehicles
64	**Post and telecommunications**, but only telecommunication services
72	**Computer and related activities** total

Table A1: Enterprises, employees, turnover and investment in the ICT sector of manufacturing and for services, 2002

Economic Activity [1]		Enterprises	Employees	Turnover	Investment
		No.		Mill. EUR	
ICT in manufacturing [2]					
Manufacture of					
24.65	prepared unrecorded media	10	2,580	837	31
30.01	office machinery	52	9,407	1,383	25
30.02	computers and other information processing equipment	169	23,305	11,373	217
31.30	insulated wire and cable	157	21,488	3,995	122
32.10	electronic valves and tubes and other electronic components	327	72,389	18,500	1,431
32.20	television and radio transmitters and apparatus for line telephony and line telegraphy	322	73,458	24,554	240
32.30	television and radio receivers, sound or video recording or reproducing apparatus and associated goods	149	28,135	7,565	179
33.20	instruments and appliances for measuring, checking, testing, navigating and other purposes, except industrial process control equipment	888	106,045	16,583	425
33.30	industrial process control equipment	130	10,296	1,713	19
	Total	2,204	347,103	86,503	2,689
ICT in the service sector [3][4]					
Services concerning ICT-relevant goods					
51.43.3	Wholesale of radio and television goods and accessories	1,005	16,462	14,280	38
51.43.4	Wholesale of electrical accessories and installation equipment	1,387	36,059	13,123	107
51.64.1	Wholesale of office machinery and software	2,408	49,127	32,231	188
52.45.2	Retail sale of radio and television goods and accessories	7,675	44,699	7,269	51
71.33	Renting of office machinery and equipment, including computers	454	425	1,166	1,348
	Combined	12,929	146,772	68,069	1,732
ICT services					
64.30	Telecommunications	558	206,660	59,823	6,576
72	Computer and related activities	42,025	377,908	56,360	2,954
72.1	- Hardware consultancy	3,419	19,295	3,824	77
72.2	- Software consultancy and supply	26,562	228,750	31,229	1,246
72.3	- Data processing	5,958	89,079	15,802	1,286
72.4	- Data base activities	535	3,639	401	19
72.5	- Maintenance and repair of office, accounting and computing machinery	1,279	9,551	903	18
72.6	- Other computer related activities	4,272	27,595	4,200	308
	Combined	42,582	584,568	116 183	9,530
	Total	55,512	731,340	184,251	11,262
	ICT total	**57,716**	**1,078,443**	**270,754**	**13,951**
Memorandum item:					
Manufacturing total		49,960	6,294,989	1,340,399	50,037
Trade total [4]		303,931	3,533,435	873,931	9,823
Services total [3]		638,290	5,765,548	643,329	63,502

1) Sub-divisions according to the Classification of Economic Activities, 1993 edition (WZ 93) and 2003 edition (WZ 2003).
2) Results of the annual report and the investment survey for enterprises in manufacturing, as well as in mining and quarrying products; number of enterprises and employees in the month under report September 2002.
3) Data from the service statistics; enterprises or facilities with a turnover of more than Euro 16,620. NACE sections I (Transport, storage and communication) and K (Real estate, renting and business activities) were surveyed.
4) Data from trade statistics, not incl. sale of motor vehicles and agents involved in sale.

Methodical basis of the surveys

Annex B

The pilot studies on usage of information and communication technologies (ICT) in enterprises and private households were implemented in 2005 – like their predecessors for 2002 to 2004 – by the Federal Statistical Office in cooperation with the Statistical Offices of the Länder (federal states), and with support from the Statistical Office of the European Communities (Eurostat). A methodically-comparable survey took place in most other Member States of the European Union. It is therefore possible to make time comparisons for core statements and comparisons between the countries. The results for other countries and for the European Union (EU-15 or EU-25) were taken from the Eurostat online database via the European Data Service (EDS; http://www.eds-destatis.de). The results do not always contain data from all Member States of the EU for the EU-15/EU-25. The EDS always shows values for the EU-15 and EU-25 if the countries from which data are available cover at least 60% of the population and 55% of Member States. Since no information is available with individual indicators and years under report for different countries, there is no exact documentation on each country included. The information for the EU-15 or EU-25 is hence to be regarded as dimensions as to the level and development of the individual indicators.

Information and communication technologies are typified by highly-dynamic development which attracts considerable political attention. The provision of indicators on ICT also has major significance at European level (cf. Chapter 1 Summary). A regulation was hence adopted at European level which prescribes the provision of corresponding information by all Member States from 2006 onwards. The Act on Statistics of the Information Society (Gesetz über die Statistik der Informationsgesellschaft - InfoGesStatG) of 22 December 2005 served the creation of a national legal basis on which the surveys “Information technology in households” and “Information technology in enterprises” can be implemented regularly from 2006 onwards. This will enable official statistics to ensure the continuity of annual results.

1 Surveys in enterprises

Collection was implemented on the basis of Article 3 (2) (c) of Council Regulation (EC) No. 322/97 of 17 February 1997 on Community Statistics (OJ EC No. L 52 p. 1). All in all, 35,022 enterprises and an additional 4,207 financial service-providers were contacted for the main survey in 2005. Such a large sample size was selected since the survey took place on a voluntary basis, and hence experience shows that a high number of non-responses was to be anticipated.

The survey units were the enterprises and freelance operators from selected industries of the Statistical Classification of Economic Activities in the Community (NACE Rev. 1.1) in accordance with Council Regulation (EC) No. 3037/ 90 of 9 October 1990 (OJ EC No. L 293 p. 1) in the version applicable at the time of the survey.

The business register kept at the Statistical Offices of the Länder and of the Federation was used to establish the total group from which the survey units could be sampled. According to mathematical-statistical methods, the survey units to be asked were drawn by economic activities, size classes of persons employed and Federal Länder from the entire business register as on January 2005 according to a selection plan using a random sample. The selection unit was the individual enterprise. It was at the same time the survey and portrayal unit.

All in all, stratification by 55 economic activities, four size classes of persons employed and 16 Federal Länder was taken as a basis, leading to 3,520 sections. A separate random sample was drawn in each section. The stratification of enterprises with 250 and more employees, as well as those sections which had only very few members at Federal level, was planned as total sections. This means that each enterprise listed in the section was written to. Samples in sections which had a comparably very high number of members were drawn as appeared necessary to ensure depiction of the result in the desired level of detail.

The survey took place in two consecutive waves. The first dispatch took place at the beginning of March 2005, with a request to return the completed questionnaires by 24 March 2005. Those enterprises which had not yet reacted by then were sent a reminder letter in mid-April with a questionnaire and asked to reply by 13 May 2005. This additional letter to the enterprises was highly successful, and led to a considerable increase in the response rate.

The Land Statistical Offices of Baden-Württemberg, Brandenburg, Hessen, Niedersachsen, Nordrhein-Westfalen and Sachsen participated in the survey. The survey in the other Federal Länder was carried out by the Federal Statistical Office. A total of 18,031 surveys containing information that could be evaluated had been returned by the surveyed enterprises to the Federal Statistical Office and the participating Statistical Offices of the Länder by the beginning of response processing. It is possible to calculate from this that a response rate of 46% of the survey forms dispatched was achieved.

The results of all collected and verified data were processed at the Federal Statistical Office. The so-called bounded expansion procedure was used. Information on individual enterprises was thereby expanded to form results for an economic activity or a size class using the results of existing structural statistics. These are in detail:

- Cost structural statistics of the enterprises of manufacturing for Section D of the Classification of Economic Activities
- Production industries: employment, turnover, investment and cost structure of enterprises in electrical energy, gas, steam and water for Section E
- Annual survey in construction for Section F
- Annual survey in trade, and in hotel and restaurant services Sections G and H
- Business register (as in: December 2004) for Section J
- Structural statistics in the service sector (service statistics) for Sections I and K of the Classification of Economic Activities
- Turnover tax statistics for Divisions 92 and 93

Each enterprise was hence attributed to a section which emerged from the information provided by the enterprise on the main economic activity exercised and the number of its employees.

2 Survey in private households

The pilot study on ICT usage in private households 2005 was implemented in Germany as a separate test survey in accordance with section 7 subsection 2 of the Federal Statistics Act (Bundesstatistikgesetz - BStatG). The survey involved households from all Federal Länder; for Bayern and Sachsen the survey was carried out by the Federal Statistical Office, for all other Länder by the respective Statistical Offices of the Länder. 10,079 individuals from the age of ten in 4,733 households participated in the survey.

The survey took place in all Federal Länder as a written questionnaire, in which respondents received the questionnaires by post and completed them themselves. Each household was to complete a household questionnaire, as well as one personal questionnaire for each household member aged from ten. The household questionnaire focussed on questions of equipment with appliances from the field of information and communication technologies, as well as questions on the households' Internet access. Furthermore, the composition of the household, sociodemographic characteristics of the household members and the net household income was also covered. The personal questionnaire was much more extensive. In addition to questions on the usage of computers, the focus was on the nature, frequency and selected purposes of Internet usage (in particular for E-commerce) by the individual household members. Because of methodical differences in the survey, the results on the purposes of Internet usage (with the exception of E-commerce) are not comparable with the previous years, and hence are not shown in the brochure. For the first time, the acquisition of information and skills on usage of PCs and the Internet was discussed. What is more, questions on education, employment as well as personal net income were asked. The development of the questionnaires was in line with the implementation of the characteristics proposed by Eurostat for the Member States in harmonised form. The complete survey documents are available for download (in German) by clicking on "Informationsgesellschaft" on the homepage of the Federal Statistical Office (www.destatis.de/informationsgesellschaft).

A quota sample was selected as a sampling procedure. Sample units are private households; a household can be understood to mean a person living alone or a community of individuals living together (in the sense of joint housekeeping). To calculate the quota requirements, all private households identified by the Microcensus at the place of the main residence of the reference person were used as a basis (not including shared accommodation units). The social status of the main income recipients, the household type, as well as monthly net household income, were determined as stratification characteristics for the quota requirement per Federal Land. Expansion using the results of the 2004 Microcensus was based on the one hand on the quota characteristics and on the other on the characteristics of "regional structure" (former Federal territory/new Federal Länder), "age" as well as "social status" and "educational level" of the individuals required by Eurostat for the portrayal of the results.

In recruiting the households, eight of the participating Federal Länder (Berlin, Brandenburg, Bayern, Hessen, Nordrhein-Westfalen, Mecklenburg-Vorpommern, Sachsen and Thüringen) used a newly-developed tool of official statistics: the Access Panel (Permanent Sample of Voluntary Households) serves as a basis to draw samples for questionnaires without obligatory information. To establish the Access Panel, households are approached which have participated in the Microcensus and asked to take part in further questionnaires of official statistics on a voluntary basis. The use of the Access Panel shortens the recruitment phase, and hence saves time and money.

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Federal Statistical Office of Germany, Information technology in enterprises and households 2005 – Press copy, February 2006
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