Key Figures on the Danish Information Society 2006

Danish Figures

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Key Figures on
the Danish Information Society 2006

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Explanation of symbols

0 0,0	Less than 0.5 of the unit applied
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ICT is a basis for innovation

ICT is a central parameter of competition in a globalised World. If we are good at intensive use of ICT in the production of goods and services, we contribute to ensuring Danish competitiveness. If we are to reap all the benefits of ICT, a widespread use of ICT in the business and public sectors is vital.

The focus should be on the advantages and effects of ICT. We must contribute to provide the best conditions for making ICT an integral part of the work routines, and of the communication procedures in private enterprises. At the same time, the public sector has to take advantage of the digital opportunities - both internally and when interacting with citizens and enterprises. ICT is also fundamental to innovation.

The key figures in this publication and the international key figures in the publication *Key Figures on the Danish Information Society 2006 - International Figures* form the basis of the Government's IT and telecommunications policy 2006.

Helge Sander, Minister of Science, Technology and Innovation

March 2006

Contents

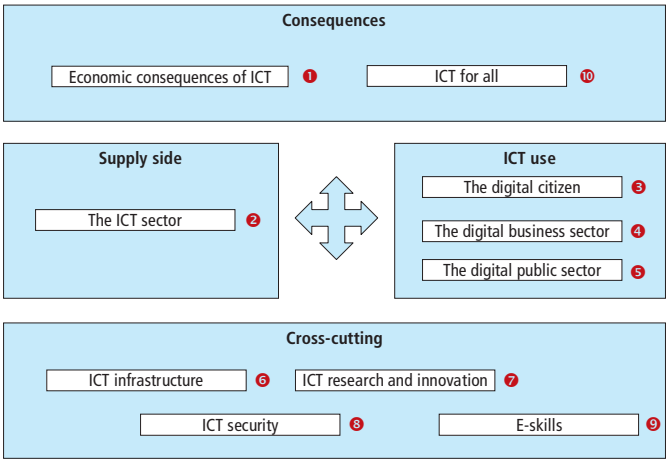
Introduction

Key figures on the Danish information society

Key figures on the Danish Information Society 2006 - Danish Figures is the third publication of key figures aimed at providing an overview of the development in the Danish information society.

Sources

The sources are statistics on ICT usage by individuals, the business sector and the public sector. Moreover, register data are applied to illustrate the Danish ICT sector and the e-skills of the labour force. In addition to data from Statistics Denmark, the publication includes figures from the National IT and Telecom Agency and the Danish Centre for Studies in Research and Research Policy.



Structure of the publication

The figure illustrates the structure of the publication, the numbers referring to the chapters. A distinction is made between supply and demand. *The ICT sector* describes the supply side, i.e. the production of ICT products and services. The demand is the use of ICT as described in *The digital citizen, The digital business sector* and *The digital public sector*.

Cross-sectoral areas

The publication also presents four cross-sectoral areas that are important to all three user groups. *ICT infrastructure* is the precondition for ICT penetration and adoption, and *ICT security* is central to further integration. The *e-skills* of the population are a prerequisite for effective utilisation of ICT in society. *ICT research and innovation* describes the efforts in relation to new knowledge and development in the field of ICT.

Consequences of ICT

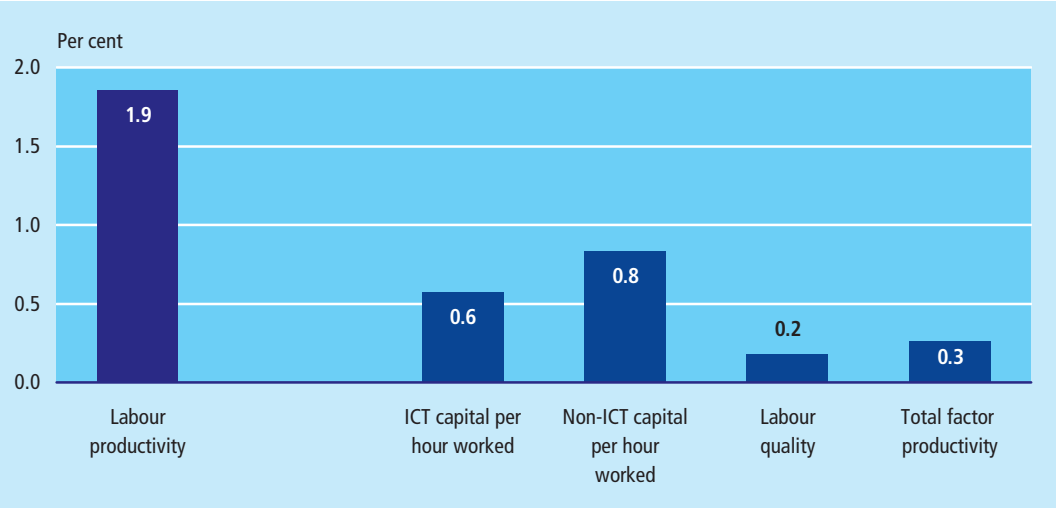
Economic consequences of ICT are described in the first chapter of the publication, illustrating the economic return of the information society. *ICT for all* shows the penetration and use of ICT among different parts of the population.

Other with international figures

Comparisons between Denmark and other countries are compiled in a separate publication entitled *Key Figures on the Danish Information Society 2006 - International Figures*.

1. Economic consequences of ICT

Figure 1.1 **Distribution of average growth in labour productivity, 2000-2003**



Source: Statistics Denmark, Produktivitetsudviklingen i Danmark (Productivity in Denmark) 1966-2003.

ICT capital has significant impact on growth in labour productivity

Just under a third of the average growth in labour productivity in the period from 2000 to 2003 is explained by ICT capital per hour worked, see the figure. The development in labour productivity is a measure of the degree to which the resources in society are utilised and can be calculated on the basis of factors such as 1) ICT capital, i.e., ICT equipment and software, 2) non-ICT capital such as plant, buildings and means of transport, etc., 3) level of education, and 4) total factor productivity, see the note to Table 1.1.

Constant contribution from ICT capital from 1980 to 2003

In the period from 1980 to 2003, labour productivity increased annually by an average of 2.8 per cent. As shown in Table 1.1 the effect of ICT capital on labour productivity is fairly constant throughout the period 1980 to 2000.

Table 1.1 **Labour productivity by type, 1980-2003**

	1980-1987	1987-1993	1993-2000	2000-2003	1980-2003
	average annual growth rate (%)				
Labour productivity	**3.2**	**2.7**	**2.9**	**1.9**	**2.8**
by:					
ICT capital per hour worked	0.7	0.6	0.7	0.6	0.6
Non-ICT capital per hour worked	0.8	1.1	0.0	0.8	0.6
Labour quality	0.2	0.3	0.2	0.2	0.2
Total factor productivity	1.6	0.8	2.0	0.3	1.3

Note. Total factor productivity is an expression of changes in labour productivity that cannot be explained by changes in ICT capital, non-ICT capital or level of education.
Source: Statistics Denmark, Produktivitetsudviklingen i Danmark (Productivity in Denmark) 1966-2003.

Figure 1.2 ICT sector's share of value added and full-time employees in the business sector

Source: Statistics Denmark, Enterprise statistics.

ICT sector of major importance to value added

The ICT sector has a larger effect on the value added in the business sector than implied by its share of employment. In 2003, the ICT sector's share of the value added in the business sector in general was 10.1 per cent, while its share of employment was 7.2 per cent.

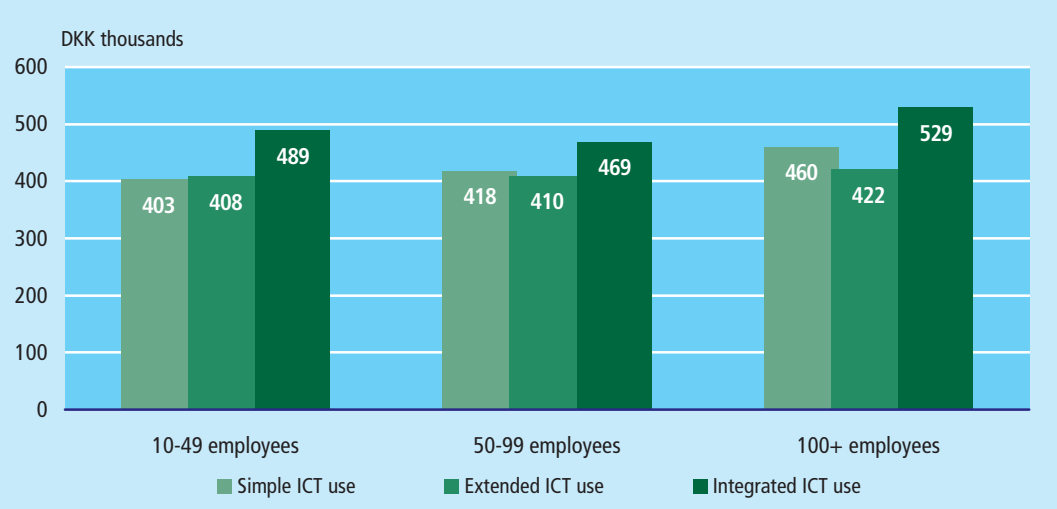
Decreasing share of value added and employment

From 2001 to 2003, the ICT sector saw a decrease in its shares of both employment and value added. Employment dropped the most by 1 percentage point, while the value added decreased by 0.3 percentage point. Conversely, this means that the value added per full-time employee rose from about DKK 585,000 in 2001 to DKK 664,000 in 2003.

High value added in telecommunications

The value added in the telecommunications industry was first calculated in 2001. The industry employs 22 per cent of all ICT sector employees, but accounts for 30 per cent of the value added.

Figure 1.3 **ICT use and value added per full-time employee, selected industries, 2002**



Note. Based on 2,359 enterprises in selected industries (high-tech industry, low and medium-tech industries, construction, transport and mail, commerce, hotels and restaurants). Non-raised figures. The breakdown into the three ICT levels is described in more detail on p. 174 of "*Informationssamfundet Danmark 2005*" (The Danish Information Society 2005).
Source: Statistics Denmark, ICT use by Danish enterprises, 2002, special extract for the Ministry of Science, Technology and Innovation, 2006.

Correlation between ICT use and value added

A special extract of data concerning the ICT use by enterprises and data on the value added shows that enterprises with integrated ICT use have a higher value added per full-time employee than enterprises with simple or extended ICT use.

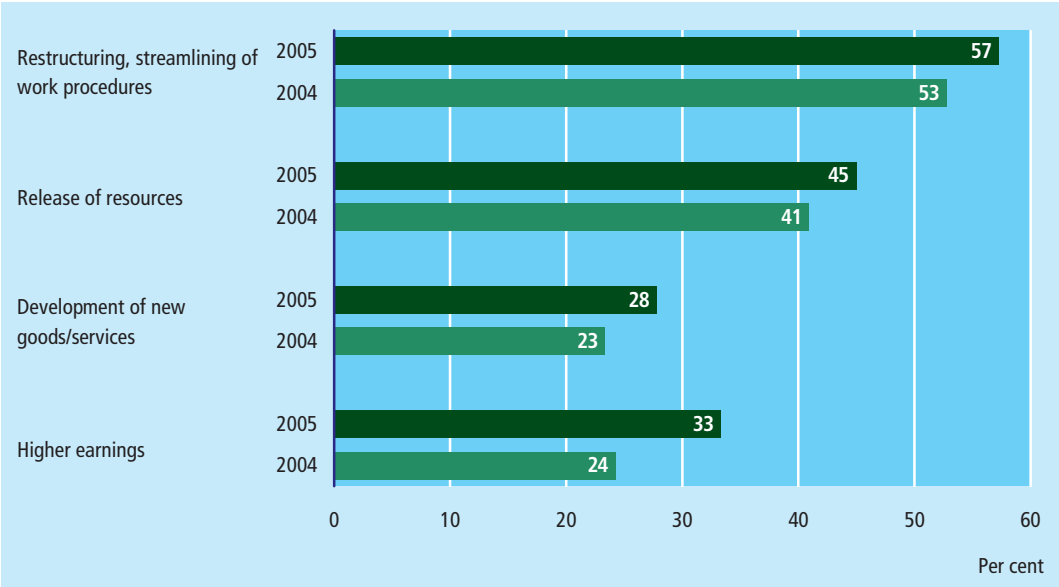
Clear effect of integrated ICT use

Enterprises with integrated ICT use differ noticeably from the other enterprises, while the correlation for enterprises with simple or extended ICT use is more blurred - probably as a result of other factors than ICT use.

Biggest effect in small and large enterprises

For small enterprises (10-49 employees), the value added per employee is about DKK 80,000 higher in enterprises with integrated ICT use than in other enterprises. The difference is about DKK 50,000 for medium-size enterprises (50-99 employees) and about DKK 90,000 for large enterprises (100 or more employees).

Figure 1.4 **Effect of ICT projects in enterprises**



Note. The enterprises were asked the following: 'To what extent have the ICT projects of the last two years caused changes in relation to previous task handling?'. Enterprises with no ICT projects answered 'Unknown/not applicable'.
Source: Statistics Denmark, ICT use by Danish enterprises, 2005.

Restructured work procedures most common

Enterprises with 10 or more employees have assessed the impact of four effects of the ICT projects implemented the last two years. Restructuring and streamlining of work procedures is the effect experienced most frequently by the enterprises. Thus, 57 per cent have noted such an effect to a high extent or to some extent, which in an increase from 53 per cent in 2004.

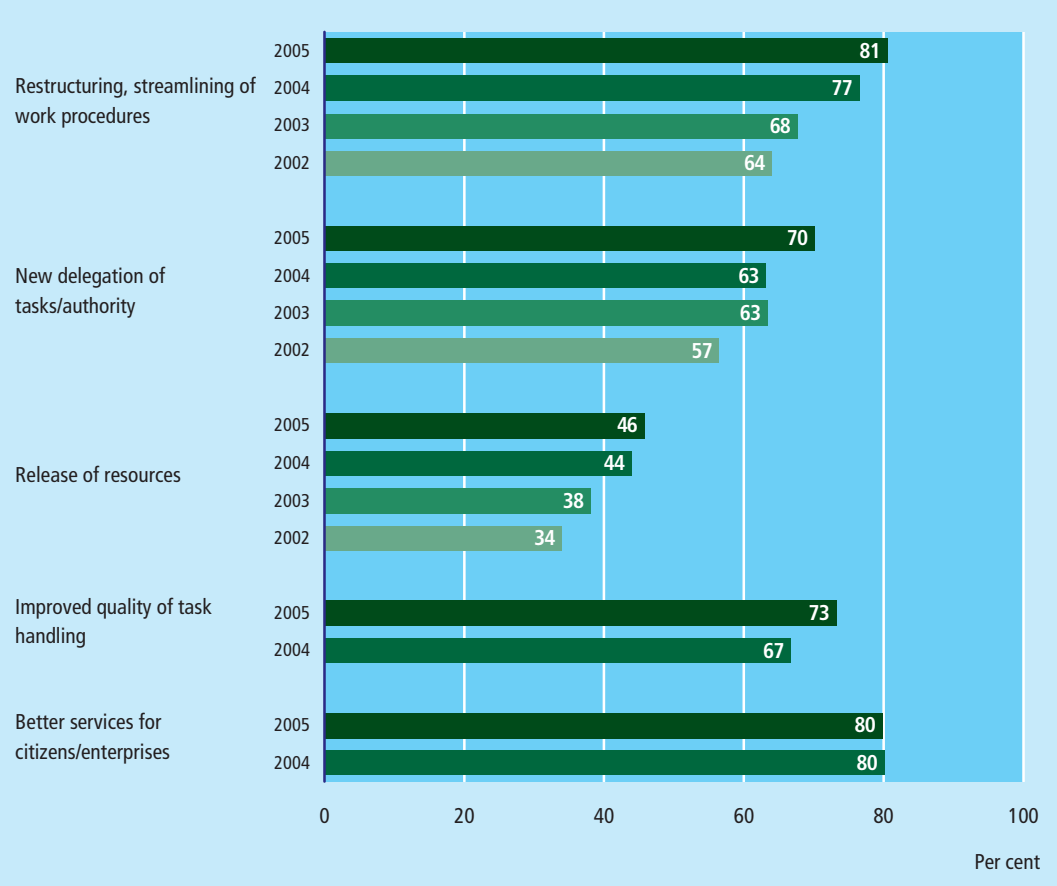
Almost one in two enterprises saw a release of resources

Forty-five per cent of enterprises experienced a release of resources as a result of ICT projects in 2005 as against 41 per cent in 2004. Development of new goods/services comes in second: 28 per cent have experienced this to a high extent or to some extent in 2005 as against 23 per cent in 2004.

Most obtain higher earnings from ICT projects

One in three enterprises, 33 per cent, experienced higher earnings in 2005 in connection with the ICT projects of the last two years. This is a fairly large increase on 2004, when the share was 24 per cent.

Figure 1.5 **Effect of digitalisation projects at public authorities**



Note. The public authorities were asked the following: 'To what extent have the ICT projects of the last two years caused changes in relation to previous task handling?' The answers were given in relation to the areas comprised by digitalisation. The figure comprises authorities which experienced the effect to a high extent or to some extent.
Source: Statistics Denmark, ICT use by the public sector, 2005.

Digitalisation frequently affects organisation

The public authorities have evaluated the extent of five effects of the digitalisation projects of the last two years. Eighty-one per cent of the authorities have restructured and streamlined work procedures, and 70 per cent have changed the delegation of tasks and authority.

Release of resources by almost one in two authorities

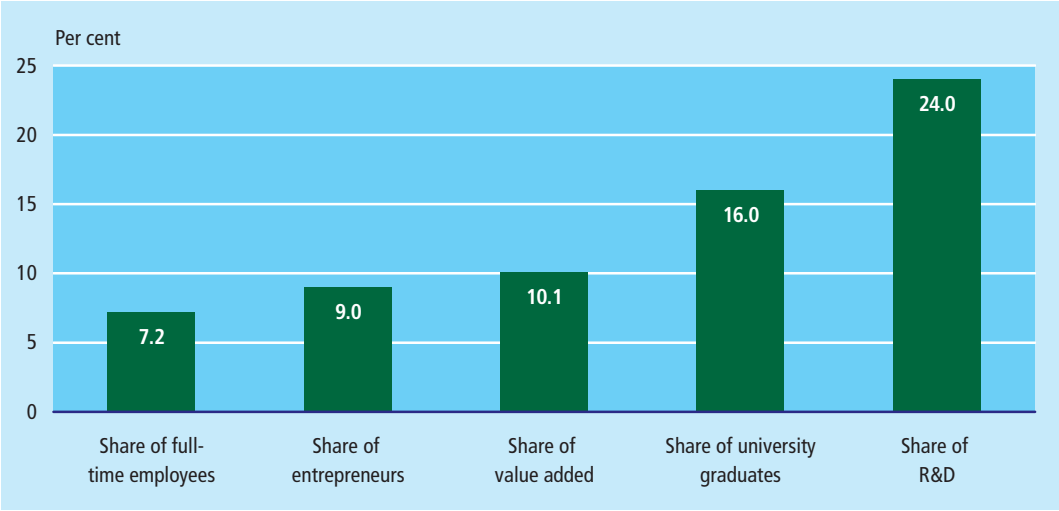
Release of resources occurred in 46 per cent of the authorities. An effect more frequently experienced was improved quality of task handling, which occurred at 73 per cent of the authorities. Finally, 80 per cent find that digitalisation has led to better services for users.

Persistent increases in effects

Several of the effects have become more widespread in the last few years. This is the case for restructuring of work procedures, which rose from 64 per cent in 2002 to 81 per cent in 2005. Release of resources is the least widespread effect, but it has increased markedly from 34 per cent of the authorities in 2002 to 46 per cent in 2005.

2. The ICT sector

Figure 2.1 **Size, value added and knowledge intensity of the ICT sector, 2003**



Note. The calculation of entrepreneurs is only indicative as the statistics have been restructured.
Source: Statistics Denmark, Enterprise statistics and Education and Employment of the Population, and Danish Centre for Studies in Research and Research Policy, Erhvervslivets forskning og udviklingsarbejde 2003 (Research and development by trade and industry).

ICT sector characterised by high knowledge intensity

The ICT sector is substantially more knowledge-intensive than the business sector as a whole. By size, the ICT sector accounted for 7.2 per cent of all employees in 2003, but by R&D investments and share of university graduates its shares were far higher.

Substantial investments in R&D

The most distinctive figure is the ICT sector's contribution to total R&D investments, which in 2003 corresponded to 24 per cent of total R&D investments by the business sector.

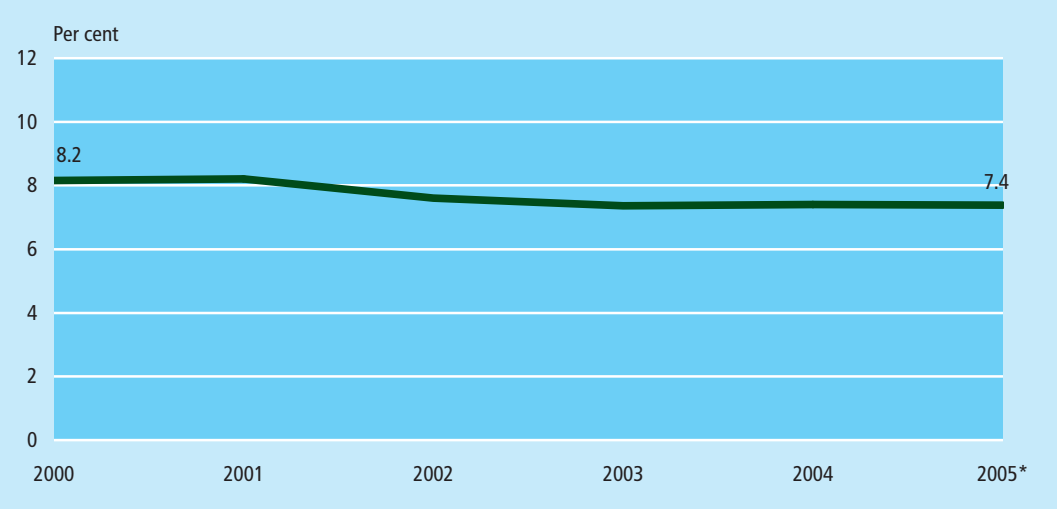
High level of education...

Employees in the ICT sector generally have considerably higher degrees than employees in the business sector as a whole. Employment in the ICT sector accounted for 7.2 per cent of all employees in the business sector in 2003. Its share of university graduates, on the other hand, was more than twice as high, at 16 per cent as against 6 per cent in the business sector.

..and many entrepreneurs

The ICT sector had a share of entrepreneurs of 9.0 per cent, which is also higher than the share of employees in the business sector. At 10.2 per cent, the value added is higher as well.

Figure 2.2 **Full-time employees in the ICT sector, as a percentage of full-time employees in the business sector**



Note. *2005 only contains data for the first three quarters.

Note. The figure is based on data from the ATP statistics, and the data have been calculated as an average of the four quarters.
Source: Statistics Denmark, ATP statistics 2000-2005.

Employment in ICT sector came to 7.4 per cent in 2005

In 2005, employment in the ICT sector accounted for 7.4 per cent of the total employment in the business sector. This is a reduction of the share from 8.2 per cent in 2000. Total employment in the ICT sector fell from about 104,000 in 2000 to about 92,000 in 2005.

Major differences within ICT sector

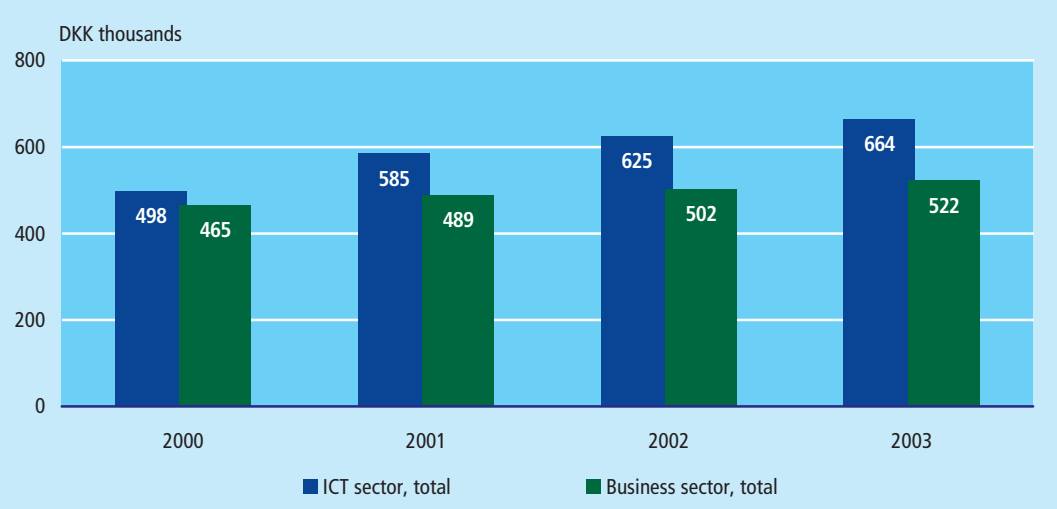
ICT manufacturing's share of total employment in the ICT sector decreased from 21 per cent in 2000 to 14 per cent in 2005, corresponding to a decrease of about 8,000 full-time employees, while the share of ICT consulting firms rose from 29 per cent in 2000 to 38 per cent in 2005.

Table 2.2 **Full-time employees in the ICT sector**

	2000	2001	2002	2003	2004	2005*
	1,000 employees					
Business sector, total	1 275	1 275	1 279	1 235	1 233	1 240
ICT sector, total	104	105	97	91	91	92
	percentage of business sector					
ICT sector's share	8.2	8.2	7.6	7.4	7.4	7.4

Note. *The figures for 2005 are based on an average of the first three quarters. ATP figures for Q3 2005 are provisional.
Source: Statistics Denmark, ATP statistics 2000-2005.

Figure 2.3 **Value added per full-time employee**



Note. Telecommunications are included as from 2001, which accounts for most of the increase in 2001 and 2002 in the ICT sector.
Source: Statistics Denmark, Enterprise statistics.

Higher value added per employee in ICT sector than in the rest of the corporate sector

The earnings capacity of the ICT sector, measured as the average value added per full-time employee, is higher than the average for the business sector. In 2003, the ICT sector had an average value added per full-time employee of DKK 664,000, or 27 per cent above the level of the business sector, which was DKK 522,000 per full-time employee.

Major mutual differences within ICTsector

There are major mutual differences between the value added per full-time employee of the individual industries within the ICT sector. In 2003, the telecommunications industry had a value added per full-time employee of DKK 901,000, while the corresponding figure for ICT manufacturing was DKK 524,000.

New calculation

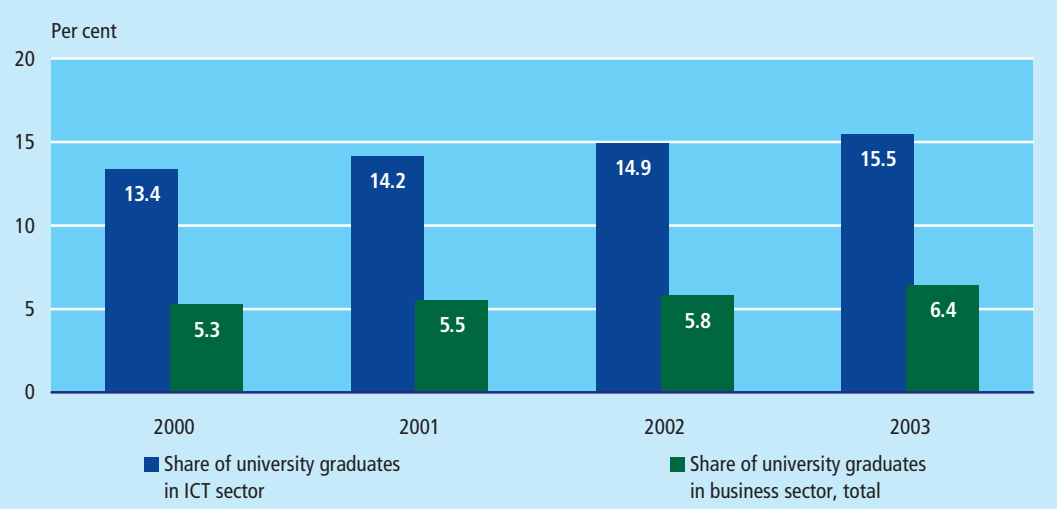
Telecommunications have only been calculated as from 2001, resulting in a large increase in the ICT sector value added from 2001 to 2002.

Table 2.3 **Value added per full-time employee**

	2000	2001	2002	2003
	DKK 1,000			
Business sector	**465.2**	**488.1**	**503.5**	**522.3**
ICT sector, total	**497.6**	**585.1**	**624.6**	**664.0**
ICT manufacturing	393.0	445.3	484.1	523.7
ICT wholesale	548.4	533.2	566.2	587.4
ICT consulting services	525.0	544.3	599.6	635.8
Telecommunications	…	854.4	853.8	901.2

Note. Telecommunications were not calculated until 2001 and are therefore only included in "ICT sector, total" as of that year.
Source: Statistics Denmark, Enterprise statistics.

Figure 2.4 **Share of university graduates in the ICT sector**



Source: Statistics Denmark, Education and employment of the population.

High educational level in ICT sector

The labour force of the ICT sector generally has a high, and increasing, educational level. In 2003, 15.5 per cent of ICT sector employees had a university degree, i.e., either a bachelor's degree, a master's degree or a Ph.D. This is nearly three times higher than the percentage for the business sector as a whole regarding the share of university graduates.

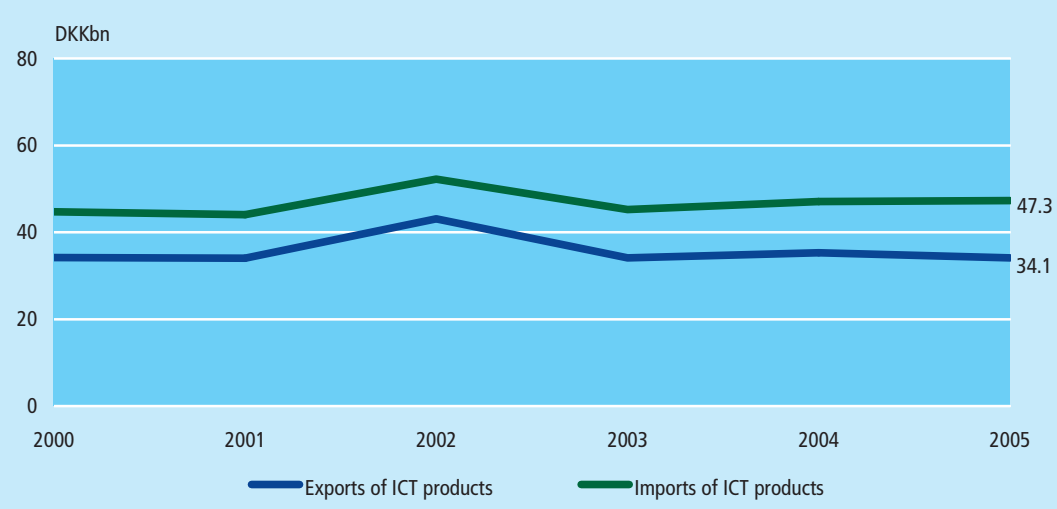
2 percentage points increase in share of university graduates

The ICT sector has seen a larger increase in the share of university graduates than the overall business sector - from 13.4 per cent in 2000 to 15.5 per cent in 2003, or an increase of about 2 percentage points - while the share of the business sector as a whole during the same period rose from 5 per cent to just over 6 per cent, or 1 percentage point.

One in six university graduates works in the ICT sector

The ICT sector employs about 15 per cent of all university graduates. This large share should be seen in relation to the fact that the ICT sector accounted for just under 8 per cent of total employment in the business sector in 2003.

Figure 2.5 **Exports and imports of ICT products and exports of ICT services**



Source: Statistics Denmark, Foreign trade statistics (special extract).

Exports of ICT products came to DKK 34bn in 2005

Danish exports of ICT products totalled DKK 34bn in 2005, which is on a level with the Danish ICT exports in 2000. Danish imports of ICT equipment totalled DKK 47bn in 2005, a rise of DKK 2bn since 2000. In 2005, ICT exports accounted for 8.2 per cent of Denmark's total exports.

Exports of high-tech products of great importance

A comparison of three difference product groups illustrates the importance of high-tech exports: Both exports of ICT products and medical products were on a level with the exports of agricultural products. However, neither the exports of ICT products nor of medical products have increased since 2003.

Exports of ICT services for DKK 6.4bn in 2004

Exports of services by ICT consulting firms amounted to DKK 6.4bn in 2004, or 14 per cent of the total turnover of the industry. Exports from ICT consulting firms have increased by about DKK 100 million compared with 2004.

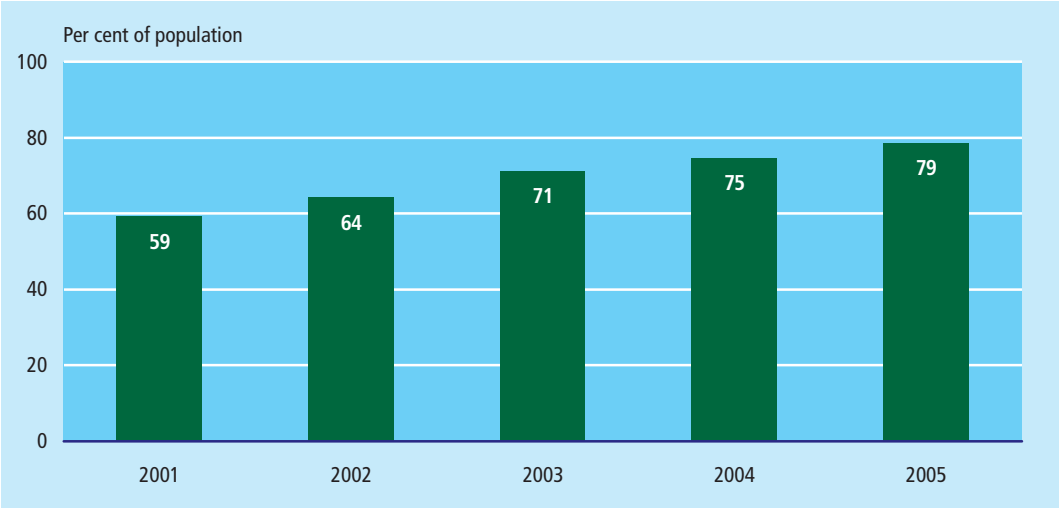
Table 2.5 **ICT exports and exports of selected product groups**

	2000	2001	2002	2003	2004	2005
	DKKbn					
Total exports	**408.2**	**424.7**	**442.8**	**429.3**	**452.4**	**415.5**
Exports of ICT products	34.2	34.1	43.1	34.1	35.3	34.1
Exports of medical products	24.1	28.2	30.4	32.2	33.6	32.7
Exports of agricultural products	42.0	46.7	43.7	42.5	44.0	37.7

Source: Statistics Denmark, Foreign trade statistics (special extract).

3. The digital citizen

Figure 3.1 **Internet access at home**



Source: Statistics Denmark, Internet use by the population.

Four in five had Internet access at home in 2005

In 2005, 79 per cent of the population had Internet access at home. The figure shows that Internet access at home has been steadily increasing from 2001 to 2005. In 2001 only six in ten had Internet access at home.

PC the most common device for access

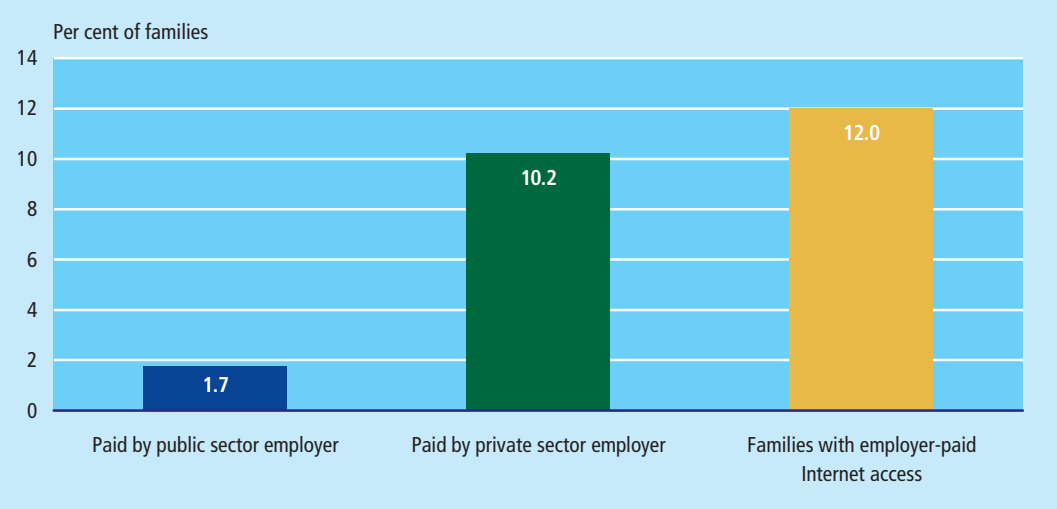
In 2005, 78 per cent of the population had Internet access at home through a PC, either a stationary one or a laptop. Likewise, 4 per cent had Internet access from a handheld computer, while 13 per cent had access from their mobile phones.

Table 3.1 **Devices for home Internet access**

	2003	2004	2005
	per cent of population		
Pc	71	74	78
Handheld computer	2	3	4
Mobile phone	4	13	13

Source: Statistics Denmark, Internet use by the population.

Figure 3.2 **Employer-paid Internet connection at home, 2005**

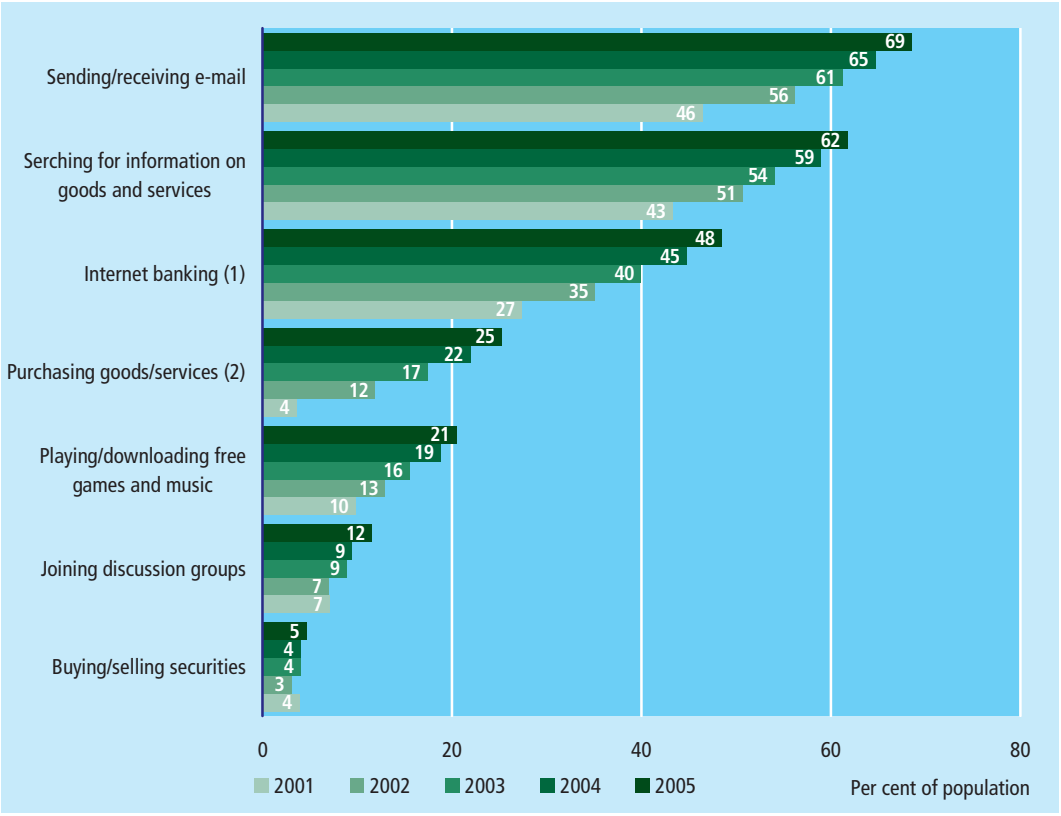


Source: Statistics Denmark, Internet use by the population.

Largest share for privately paid Internet connections

In 2005, 12 per cent of families had an employer-paid Internet connection at home. Ten per cent of all families have an Internet connection paid by a private sector employer. Less than 2 per cent of families have an Internet connection paid by a public sector employer.

Figure 3.3 **Private purposes for using the Internet**



[1] In 2001-2003 the question related to banking transactions.

[2] Concerning the purchase of goods/services, 2001 is not directly comparable with the period 2002 to 2005. In 2001 the question was how many had used e-commerce at least once a month. In 2002-2005 the question was how many had used e-commerce in the last month.

Source: Statistics Denmark, Internet use by the population.

Rise in private purposes over time

The most common private purposes for using the Internet are to communicate, search for information and use online services. All the private purposes have seen an increase over time. The ranking of the purposes has generally been unchanged over the last five years, but e-commerce appears to have gained ground from 2003 to 2005 over playing/downloading free games and music.

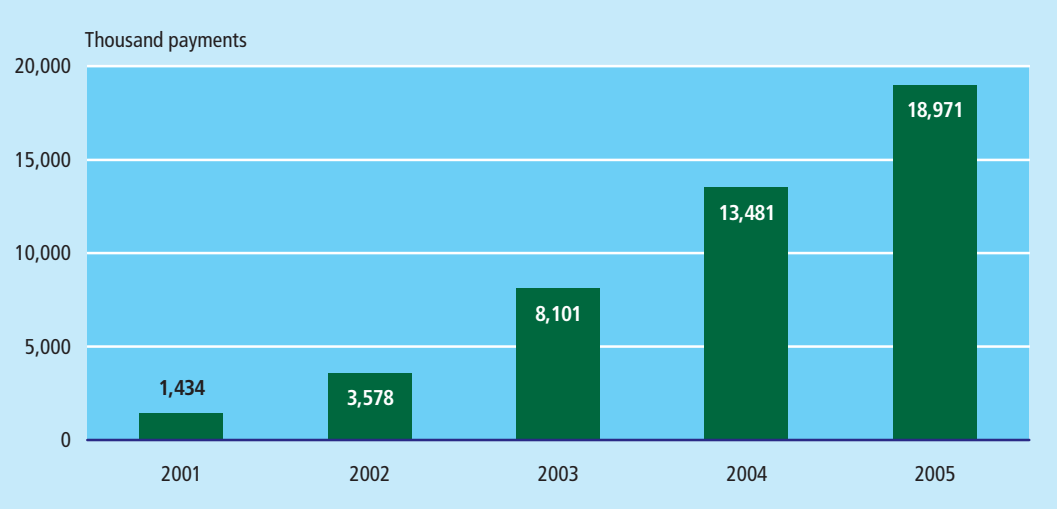
69 per cent used the Internet to receive and send e-mails

In 2005, 69 per cent of the population had used the Internet within the last month to send and receive e-mail, 62 per cent used it to search for information about goods and services, and 48 per cent to handle their bank transactions via an Internet bank.

One in eight chats

Of the population, 25 per cent used the Internet to buy goods or services (except financial services), 21 per cent played/downloaded free games and music, while 12 per cent took part in discussion groups (chatted). Only 5 per cent had traded in securities in the last month of 2005.

Figure 3.4 **Number of card payments in Danish Internet shops**



Source: PBS, January 2006.

Continued large increase in card payments through PBS

The number of card payments in Danish Internet shops has risen noticeably from 2001 to 2005. In 2005, a total of 19.0 million card payments were effected through PBS as compared to 13.5 million in 2004. This corresponds to a full 41 per cent increase.

Figure 3.5 **Household purchases/orders over the Internet**

Source: Statistics Denmark, Internet use by the population.

26 per cent worried about security at payment

A large proportion of the population has the opportunity to use e-commerce, but does not do so. In 2005, most respondents stated that the most significant barrier to e-commerce was that they did not need it (29 per cent). In addition, many were worried about the security at payment (26 per cent).

Barriers to e-commerce stable over time

Regarding the whole period from 2002 to 2006, the individual barriers appear to be stable over time. Thus, 30 per cent stated in 2002 that they preferred to shop in person, against 28 per cent in 2005. The shares of the barriers 'no need' and 'concerned about security in connection with payment' are quite unchanged over the entire period.

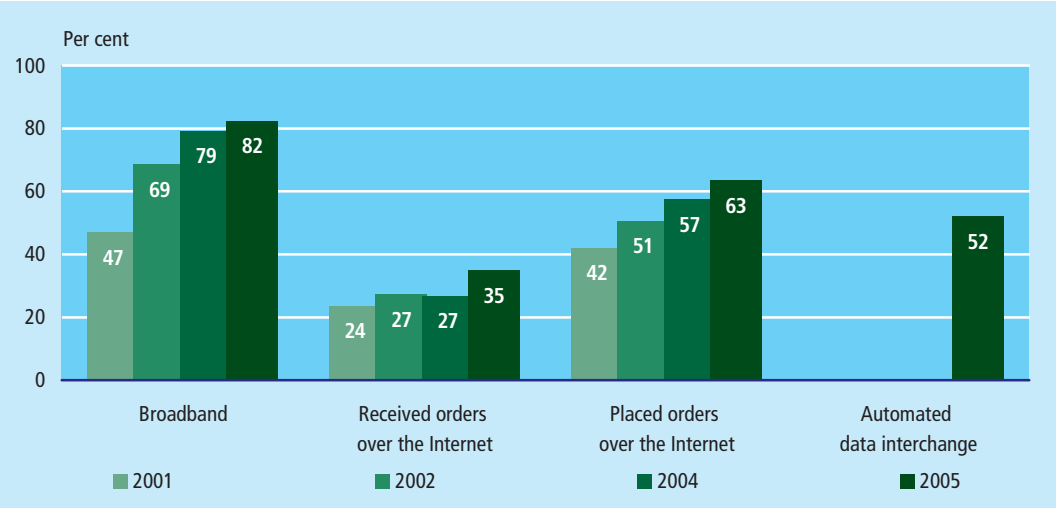
Table 3.5 **Most significant barriers to purchases of goods/services over the Internet**

	2002	2003	2004	2005
	per cent of Internet users			
Prefer to shop in person	30	28	26	28
No need	29	28	29	29
Concerned about security in connection with payment	26	26	29	26
Other	16	18	16	17

Source: Statistics Denmark, Internet use by the population.

4. The digital business sector

Figure 4.1 **Selected ICT use by enterprises**



Note. Broadband means ADSL and the like, or other cable-based Internet connections (i.e., access roads faster than analogue modems or ISDN). Enterprises with 10+ employees. Automated data interchange comprises the transfer of form-like business documents, etc., direct from one ICT system to another.
Source: Statistics Denmark, ICT use by Danish enterprises.

Notable increase in broadband penetration ...

Eighty-two per cent of all enterprises have broadband access to the Internet. Compared with 2001, when 47 per cent had broadband, this is a remarkable increase, which is apparently levelling off in 2005.

... and in purchases and sales via the Internet

Also e-commerce rose during the period. The share of enterprises that received orders over the Internet increased from 24 per cent in 2001 to 35 per cent in 2005. About twice as many purchased over the Internet in that period, an increase from 42 per cent in 2001 to 63 per cent in 2004.

One in two enterprises automates data interchange

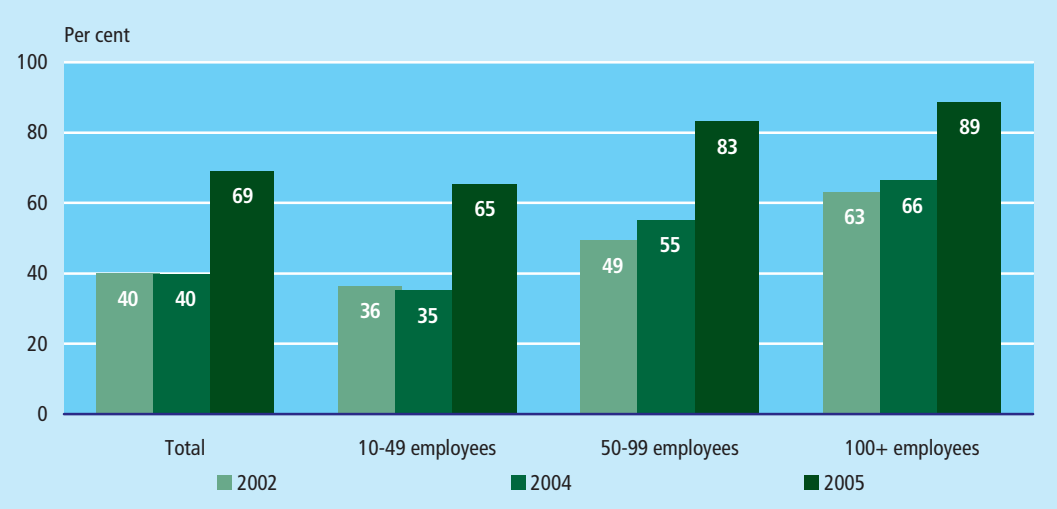
Just over one in two enterprises use automated data interchange of business documents, etc., but for enterprises with more than 100 employees the share is three in four.

Table 4.1 **Selected ICT use by size of enterprise, 2005**

	Number of employees			
	10-49	50-99	100+	**Total**
	per cent			
Broadband	80	90	95	**82**
Received orders over the Internet	35	34	39	**35**
Placed orders over the Internet	61	71	81	**63**
Automated data interchange	49	61	74	**52**

Source: Statistics Denmark, ICT use by Danish enterprises, 2005.

Figure 4.2 **Enterprises with ICT systems for handling orders**



The large increase in 2005 may be ascribed to a wider definition adopted at EU level.
Source: Statistics Denmark, ICT use by Danish enterprises.

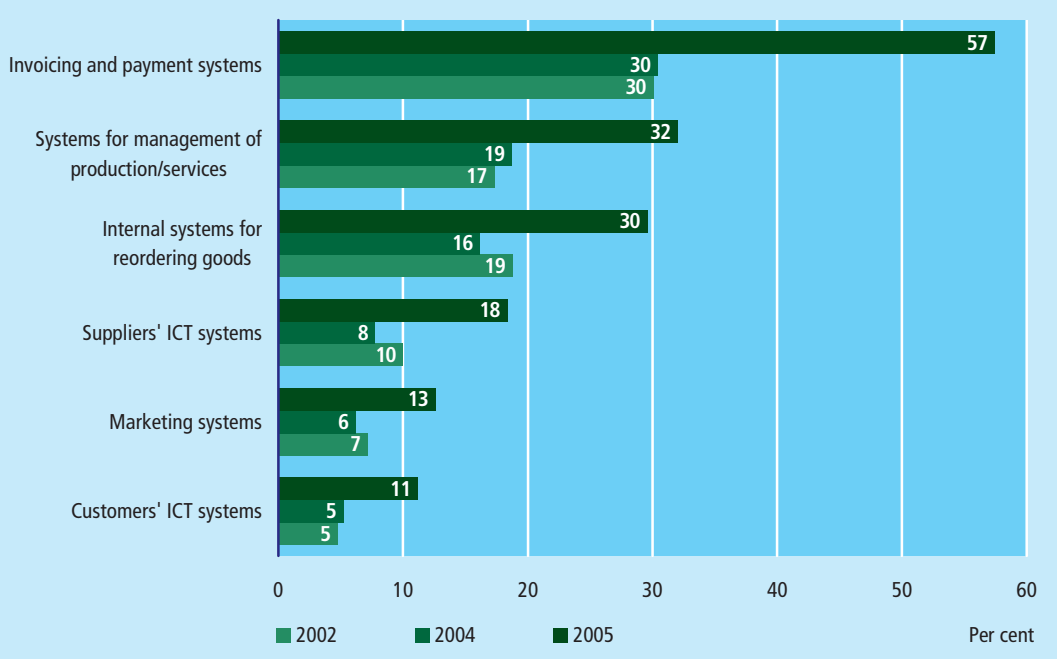
Seven in ten enterprises have ICT systems for handling orders ...

In 2005, 69 per cent of enterprises with 10 or more employees used ICT systems for handling orders. In 2002 and 2004, this share was 40 per cent. Accurate assessment of the rise is not possible, however, as a narrower definition of the concept was used in those years.

... and nine in ten of the largest enterprises

The penetration of order systems rises with the size of the enterprises. In 2005, 89 per cent of enterprises with 100 employees or more thus used ICT systems for handling orders.

Figure 4.3 **Integration of order handling systems with other ICT systems**



The large increases in 2005 may be ascribed to a wider definition adopted at EU level.

Integration with 'other ICT systems' also means integration of business processes in one and the same system.
Source: Statistics Denmark, ICT use by Danish enterprises, 2005.

Purchasing or ordering systems most frequently integrated with invoicing

As mentioned in connection with Figure 4.2, 69 per cent of the Danish enterprises have ICT systems for handling orders. These systems are connected to the other systems of the enterprise to a varying extent. Most commonly with invoicing and payment systems; 57 per cent of all enterprises have order handling systems with such integration.

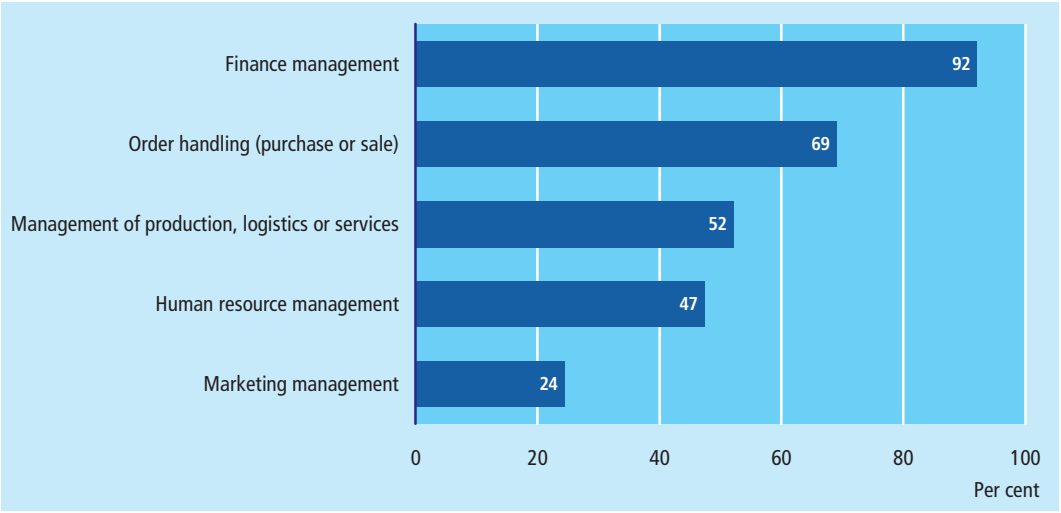
One in three has order handling system with integration to production management

Nearly one in three enterprises, 32 per cent, has an order handling system that is integrated with systems for managing production or services. Thirty per cent have integration with systems for reordering of products. This is followed by suppliers' ICT systems (18 per cent), marketing systems (13 per cent) and integration with customers' ICT systems with the lowest share (11 per cent).

Same ranking as in previous years

The ranking in 2005 approximately follows the pattern of 2002 and 2004. However, accurate assessment of the rises is impossible as a narrower definition of the 'systems for order handling' concept was used previously.

Figure 4.4 **Use of ICT systems in business processes, 2005**



Source: Statistics Denmark, ICT use by Danish enterprises, 2005.

Nine in ten use finance management systems

Danish enterprises frequently use ICT systems to support their business processes. As an example, 92 per cent use an ICT system intended for finance management.

One in two enterprises uses ITC systems for HR management

Order handling at the purchase or sale was supported by ICT systems in 69 per cent of the enterprises. Slightly fewer, 52 per cent, use ICT systems to manage production, logistics or services, and 47 per cent support their human resource management with ICT systems. About one in four enterprises uses ICT systems to manage their marketing.

One in six mentions ICT investments in both budget and strategy

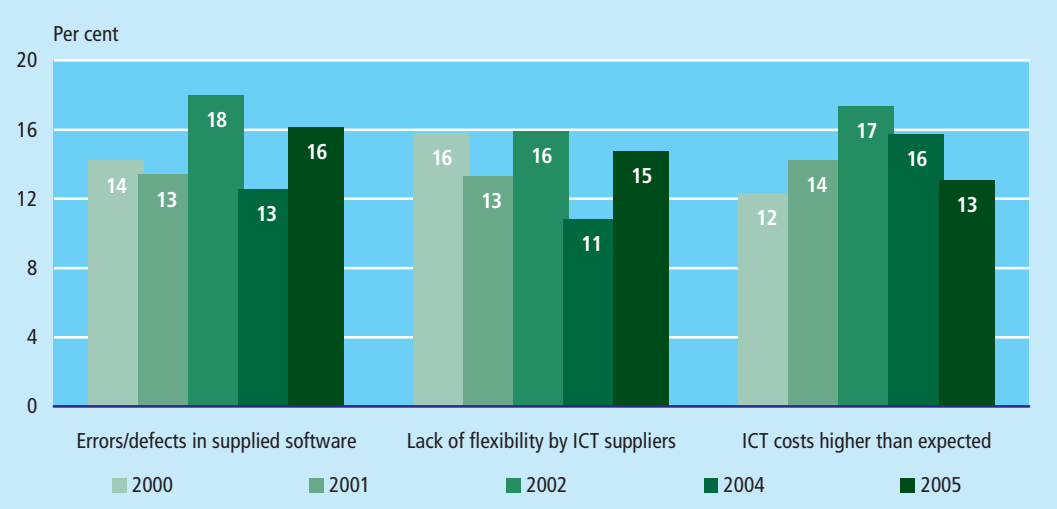
ICT investments and their incorporation in the organisation may reflect the strategic anchoring of ICT. In January 2005, 43 per cent of enterprises had specific ICT investment plans for 2005. For 28 per cent, the ICT investment plans were mentioned directly in the budget, and for 19 per cent the ICT investment plans were mentioned in the strategy or business plan. A slightly lower share, 16 per cent, mentioned the ICT investments in both the budget and the strategy or business plan.

Table 4.4 **Strategic anchoring of ITC investments, 2005**

	Number of employees			
	10-49	50-99	100+	**Total**
	per cent			
Specific ICT investment plans	38	59	82	**43**
ICT investments mentioned in budget	23	43	69	**28**
ICT investment mentioned in strategy/business plan	15	26	46	**19**
ICT investment mentioned in both budget and strategy/business plan	12	22	43	**16**

Source: Statistics Denmark, ICT use by Danish enterprises, 2005.

Figure 4.5 **Barriers to ICT use by enterprises**



Note. The figure includes enterprises that considered the barriers to be of 'high' importance. The assessment of barriers is sensitive to current events at the time of the survey, which may contribute to differences between the individual years.
Source: Statistics Denmark, ICT use by Danish enterprises.

Most common barriers

Among the most significant barriers to the use of ICT by Danish enterprises that have been traceable in recent years are errors/defects in purchased software, lack of flexibility by ICT suppliers and higher ICT costs than expected. On average, one in seven enterprises rated these barriers as being of high importance in the years from 1999 to 2005.

Increased importance of errors in purchased software in 2005

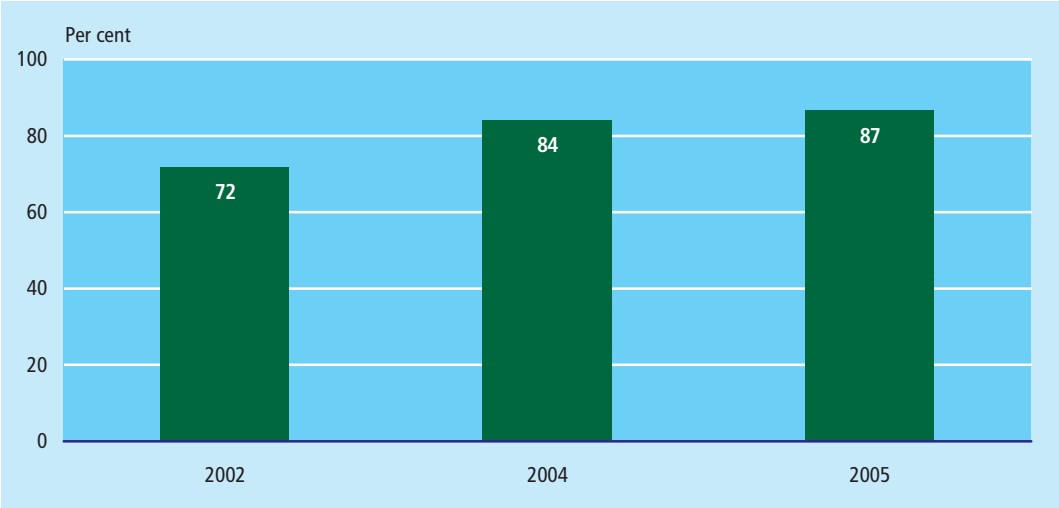
The barriers 'errors/defects in purchased software' and 'lack of flexibility by ICT suppliers' saw a downward trend from 2000 to 2004 with increases in 2002 as an exception. Both barriers increased in importance in 2005.

... but drop in importance of unexpected ICT costs

Conversely, higher-than-expected ICT costs have seen a slightly upward trend, up from 12 per cent in 2000 to 17 per cent in 2002. The importance of those costs fell slightly to 16 per cent in 2004 and further to 13 per cent of enterprises in 2005 so that the level corresponds to that of 2000.

5. The digital public sector

Figure 5.1 **Share of enterprises using public digital services**



Source: Statistics Denmark, ICT use by Danish enterprises.

Enterprises frequently use public digital services

In 2005, 87 per cent of enterprises used public digital services to search for information on web sites, download forms and submit web forms. There has been a certain increase since 2002, when the percentage was 72 per cent.

One in ten citizens used digital services in the last month

In 2005, 24 per cent of the citizens interacted with public authorities within the last month. A total of 10 per cent had interacted with public authorities over the Internet; more specifically, 8 per cent had found information on web sites, 5 per cent had downloaded forms, and another 5 per cent had submitted data to authorities over the Internet.

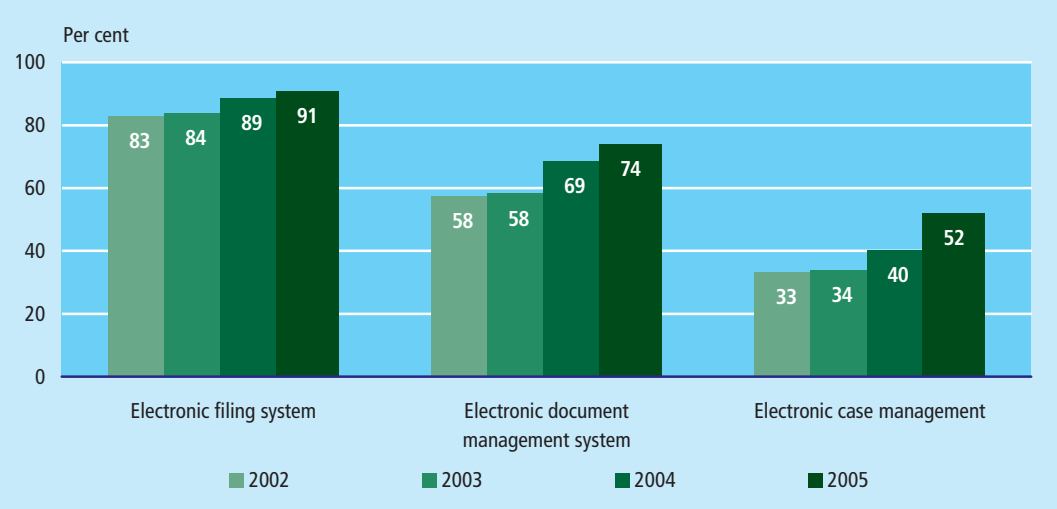
Table 5.1 **Use of digital services by population in the last month, 2005**

	Men	Women	Total
	per cent of total population		
Interaction with public authorities	**26**	**22**	**24**
Interaction with public authorities over the Internet	12	8	10
Forms of interaction over the Internet:			
Finding information on public authorities' web sites	9	6	8
Downloading forms from public authorities	5	4	5
Submitting data to public authorities	7	4	5

Note. The figures are not comparable with previous years' surveys. Unlike previous surveys, the respondents were asked directly whether they had interacted with public authorities in the last month.

Source: Statistics Denmark, Internet use by the population 2005.

Figure 5.2 **Electronic case and document management in the public sector**



Note. Electronic case and document management is defined in detail in Statistical News, ICT use by the public sector.
Source: Statistics Denmark, ICT use by the public sector.

Every second authority has electronic case management

In 2005, the vast majority of public authorities, 91 per cent, had electronic filing systems for recording of documents and case files. Electronic document management had been implemented by 74 per cent of the public authorities. Actual electronic case management, i.e. where the case process is supported electronically, had been implemented by 52 per cent of the public authorities.

Moderate rise in use of electronic case and document management

There was a steady rise in the use of electronic case and document management from 2002 to 2005. The most pronounced increase was in electronic case management, which rose from 33 per cent of the authorities in 2002 to 52 per cent in 2005.

Two in three have digitalised attestation and payment

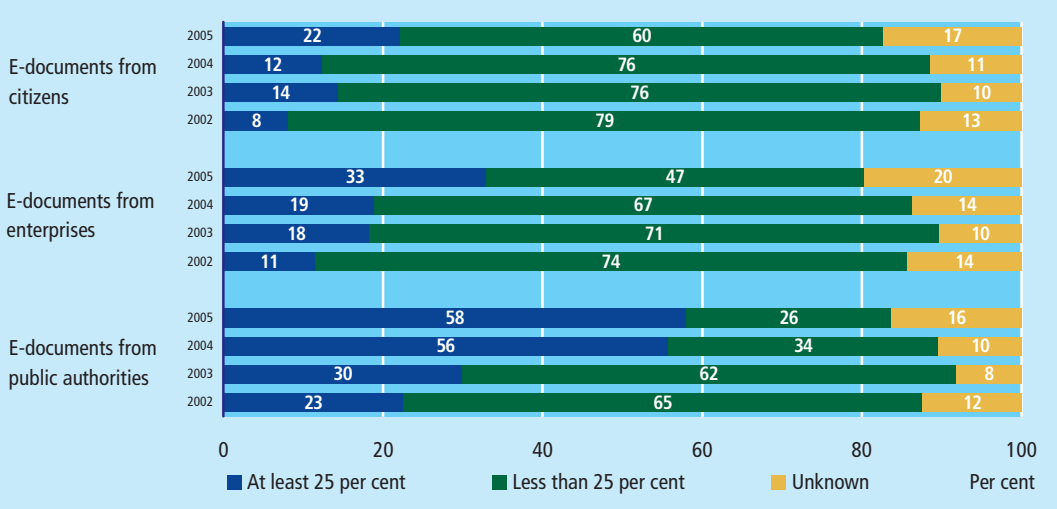
According to 68 per cent of the authorities, internal work procedures concerning attestation and payment are fully digitalised, most frequently in local authorities. C. seven in ten authorities use electronic purchasing with digital invoicing. Electronic purchasing (for example over the Internet) which is integrated with the finance management systems of the public sector exist in 29 per cent of all authorities.

Table 5.2 **Electronic purchasing, attestation and payment, 2005**

	Central gov.	Regional authorities	Local authorities	**Total**
	per cent			
Ditigalisation of internal work routines for attestation and payment	28	82	85	**68**
Electronic purchasing with digital invoicing	68	73	69	**69**
Integration of electronic purchasing with finance management system	22	55	31	**29**

Source: Statistics Denmark, ICT use by the public sector, 2005.

Figure 5.3 **Share of documents received electronically by the public sector**



Note. 'Documents' do not include informal e-mails (such as brief messages, replies, etc.).
Source: Statistics Denmark, ICT use by the public sector.

Electronic communication between authorities

The amount of electronic documents received by Danish authorities has increased from 2002 to 2005 – especially regarding documents received electronically from other authorities. In 2002, 23 per cent of public authorities received at least a quarter of the documents from other authorities electronically; by 2005 this figure had risen to 58 per cent.

Fewest e-documents from citizens

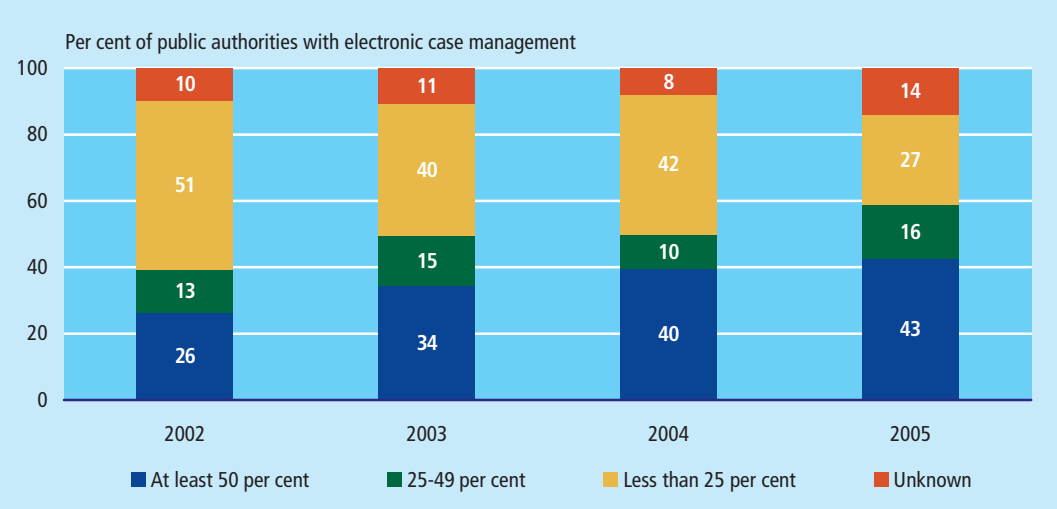
Many authorities receive less than a quarter of documents from citizens electronically, however. Central government in particular receive a large proportion of electronic documents.

Table 5.3 **Share of documents received electronically by the public sector, 2005**

	Central gov.	Regional authorities	Local authorities	**Total**
	per cent			
E-documents from citizens				
At least 25 per cent	48	18	11	**22**
Less than 25 per cent	32	55	74	**60**
Unknown/n.a.	20	27	16	**17**
E-documents from enterprises				
At least 25 per cent	60	36	21	**33**
Less than 25 per cent	20	36	61	**47**
Unknown/n.a.	21	27	19	**20**
E-documents from public authorities				
At least 25 per cent	77	64	49	**58**
Less than 25 per cent	13	9	33	**26**
Unknown/n.a.	10	27	18	**16**

Source: Statistics Denmark, ICT use by the public sector, 2005.

Figure 5.4 **Share of cases that are handled electronically in the public sector**



Note. Electronic case processing means a system that supports the administration of the case by different caseworkers.
Source: Statistics Denmark, ICT use by the public sector.

Growth in the number of cases handled electronically

In 2002, 26 per cent of public authorities with electronic case management estimated that at least half of all cases were handled without the use of paper by means of electronic case management. The corresponding figure had increased to 43 per cent in 2005.

Paper-based case processing still the main rule

Despite this increase, the figures show that paper-based case processing remains the prevailing method applied by many Danish public authorities. The figures concern public authorities with electronic case management (52 per cent of all public authorities in 2005 - see Figure 5.2).

Rise in communication in XML format

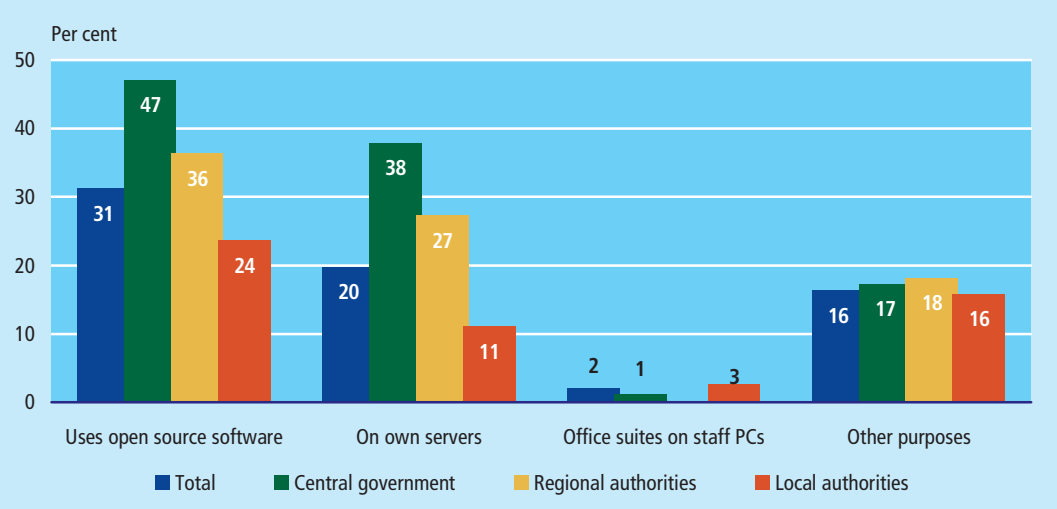
Twenty-seven per cent of all Danish public authorities use XML format in communicating with other authorities. The proportion is highest in regional and central government authorities. There has been a steep increase in use since 2002, when 6 per cent of the authorities communicated in XML format.

Table 5.4 **Communication in XML format between public authorities**

	Central gov.	Regional authorities	Local authorities	**Total**
	per cent			
2002	8	0	5	**6**
2003	11	17	8	**9**
2004	21	80	10	**16**
2005	36	64	21	**27**

Source: Statistics Denmark, ICT use by the public sector.

Figure 5.5 **Use of open source software by public authorities, 2005**



Note. Use of open source software requires no licence. The source code is open and freely available.
Source: Statistics Denmark, ICT use by the public sector, 2005.

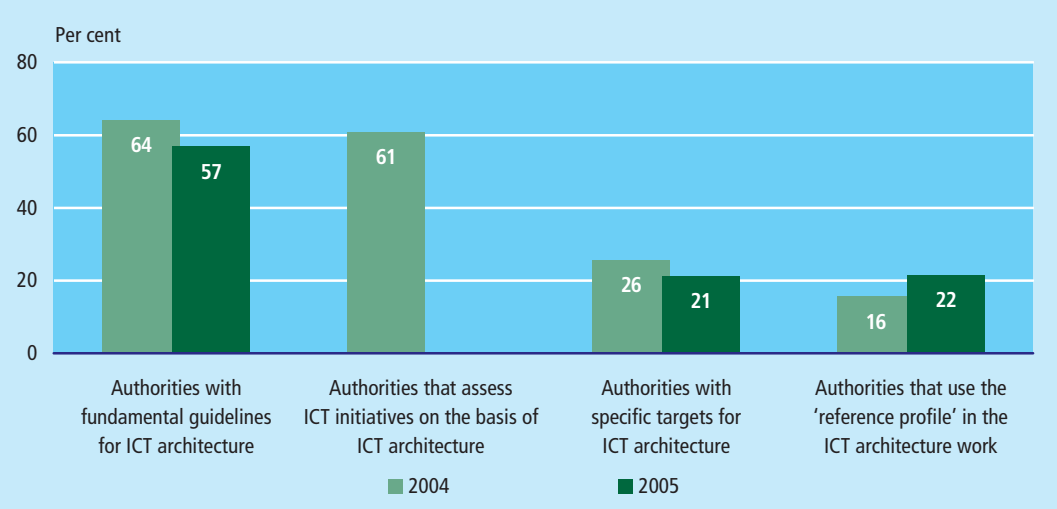
Most commonly used by central government and regional authorities

Three in ten public authorities use open source software in one or more areas. It is most commonly used by central government and regional authorities, and least commonly by local authorities, where about one in four uses open source software.

Office suites are very rarely open source software

Twenty per cent of authorities use open source software like operating systems on their own servers. By contrast, open source software in the form of office suites is very rare and only occurs in 2 per cent of the cases. Sixteen per cent use open source software for other purposes that these.

Figure 5.6 **ICT architecture in the public sector**



Note. The 'reference profile' means the Interoperability Framework of the Danish e-Government - standarder.oio.dk
Source: Statistics Denmark, ICT use by the public sector, 2005.

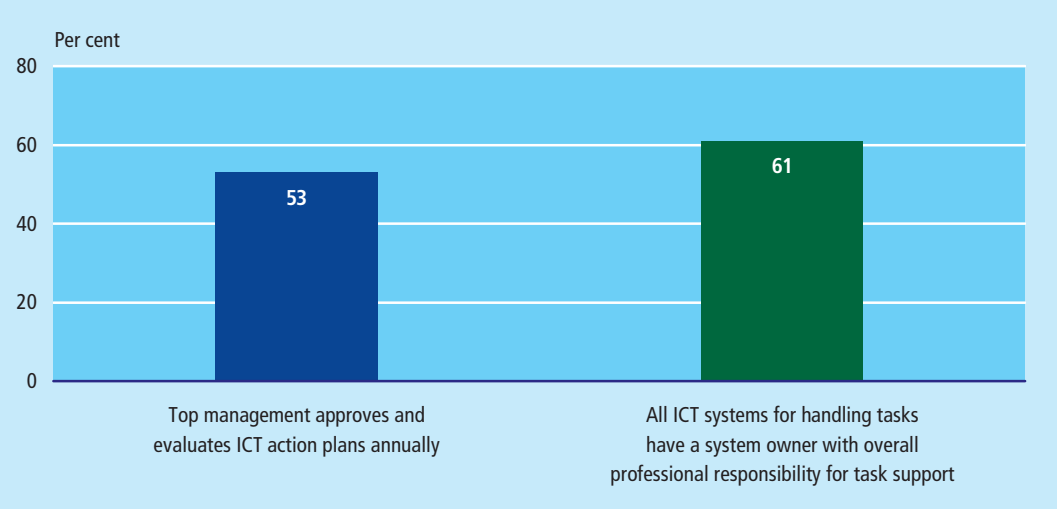
Majority has guidelines for ICT architecture

Fifty-seven per cent of the authorities have basic guidelines for the ICT architecture, a decline from 64 per cent in 2004. In 2004, 61 per cent of the authorities assessed ICT system initiatives on the basis of the ICT architecture.

Rise in use of the 'reference profile'

Twenty-one per cent of the authorities have specific targets for the ICT architecture, down from 26 per cent in 2004. On the other hand, more authorities use the 'reference profile' (that is, the Interoperability Frame of the Danish e-Government) in the ICT architecture work in 2005, namely 22 per cent compared with 16 per cent in 2004.

Figure 5.7 **ICT management in the public sector, 2005**



Source: Statistics Denmark, ICT use by the public sector, 2005.

Every second top management approves ICT action plans

Every year, the top management of slightly more than half of all authorities approve and evaluate an ICT action plan. In 61 per cent of the authorities, a system owner with the rank of at least chief of section has been appointed for each ICT system and is responsible for ensuring that the system provides support for the tasks of the office/authority.

Four in ten have an insourcing and outsourcing strategy

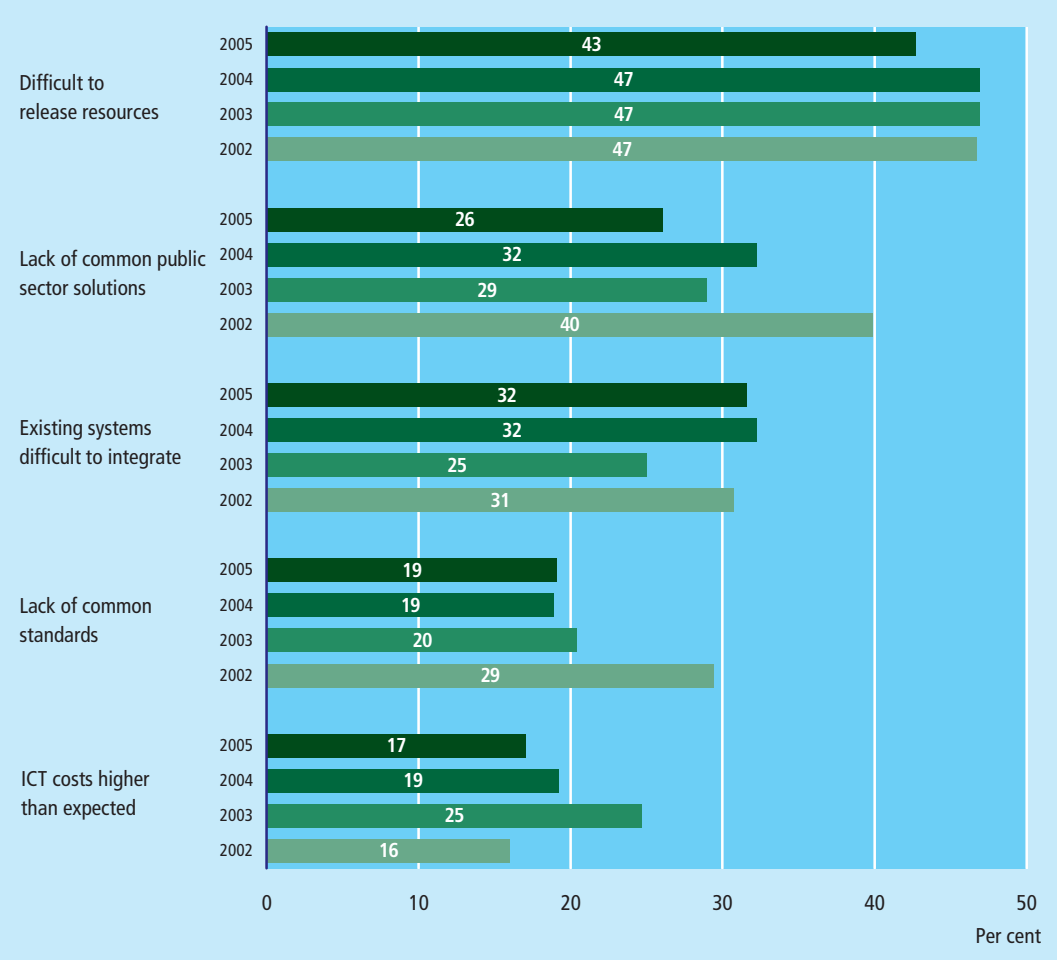
Among other targets for the management and strategic anchoring of ICT, digitalisation is a target in other strategies than the ICT strategy in 61 per cent of the authorities. Forty-three per cent of the authorities have a strategy for in/outsourcing of ICT tasks, and 35 per cent have a competence development strategy for the ICT field. Similarly, 35 per cent apply a project model to digitalisation projects.

Table 5.7 **ICT management in the public sector, 2005**

	Central gov.	Regional authorities	Local authorities	**Total**
	per cent			
Target for digitalisation in other strategies	84	82	49	**61**
Top management approves and evaluates ICT action plans annually	62	36	50	**53**
All ICT systems for handling tasks have a system owner with overall professional responsibility for task support	76	82	53	**61**
Strategy for insourcing/outsourcing ICT tasks	53	36	38	**43**
Strategy for development of competencies within ICT management, ICT architecture and ICT security	43	55	31	**35**
Project model for management and implementation of digitalisation projects	54	73	24	**35**

Source: Statistics Denmark, ICT use by the public sector, 2005.

Figure 5.8 **Barriers to e-government**



Note. The figure shows the five most significant barriers to e-government.
Source: Statistics Denmark, ICT use by the public sector.

Difficult to release resources for e-government

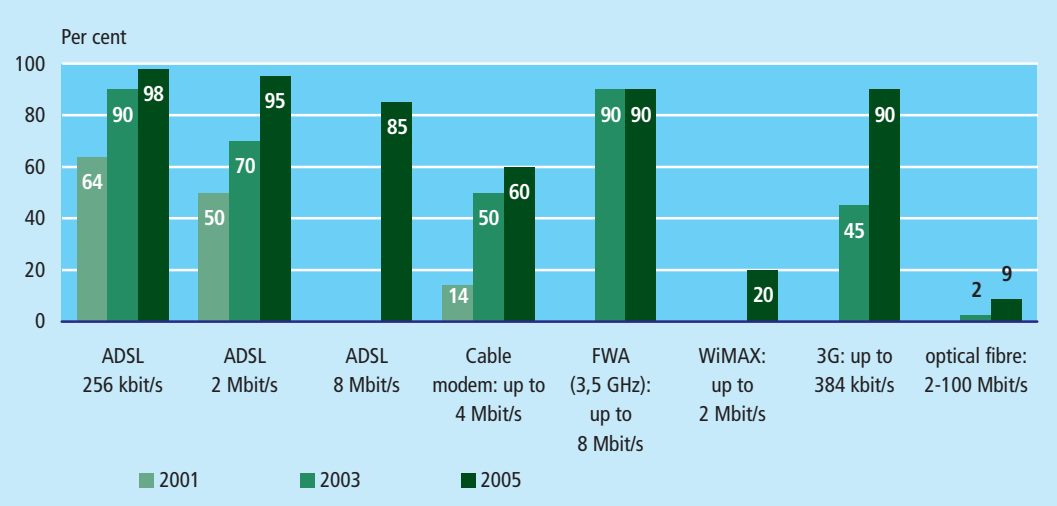
Of the five most significant barriers to e-government, difficulty in releasing resources is the most distinct. In 2005, 43 per cent of the authorities found that to be a very important barrier. However, this is a decline from 47 per cent in 2004.

Decrease in several barriers, but not in respect of systems integration

From 2002 a decrease has occurred in the importance of most of the barriers, particularly the lack of common public sector solutions and common standards. Apart from 2003, problems of integrating existing systems remained at the same level of 31-32 per cent and were thus the second most important barrier in 2005.

6. ICT infrastructure

Figure 6.1 **Availability of broadband in relation to number of households and enterprises. Speeds offered**



Note. Availability covers whether households and enterprises have the option to acquire a broadband Internet connection. The availability of cable modem and optical fibre solutions has only been determined for private households.
Source: National IT and Telecom Agency, January 2006.

Over 1.3 million broadband connections

The expansion of the broadband infrastructure in recent years has given an increasing proportion of the population and enterprises access to broadband services with a higher bandwidth. At the end of 2005, there were thus 1.34 million broadband connections - or just under 25 connections per 100 inhabitants.

More fibre

The number of fibre connections to households and enterprises is rising. There were more than 12,000 direct fibre connections at the end of 2005, mainly based on the broadband activities of the power utility companies.

Table 6.1 **Penetration of ADSL, cable modem and housing association connections**

	2001	2002	2003	2004	2005
	number of connections				
Total	**237 500**	**451 800**	**718 300**	**1 032 000**	**1 345 500**
ADSL	150 000	307 000	473 500	639 000	827 500
Cable modem	87 500	141 500	206 300	296 500	390 500
Housing association connections	…	3 300	38 500	96 500	127 500
	per 100 inhabitants				
Total penetration	4.4	8.4	13.3	18.5	24.8

Note. Availability covers whether households and enterprises have the option to acquire a broadband Internet connection.
Source: National IT and Telecom Agency, Broadband Mapping 2005, October 2005.

Figure 6.2 **Broadband access for individuals and enterprises**

Note. For the population, broadband means ADSL and other fixed-line connections (e.g., cable modem). For enterprises, broadband means ADSL and the like, or other cable-based Internet connection.
Source: Statistics Denmark, Internet use by the population and ICT use by enterprises.

Half the population has broadband access

The share of Danes with broadband connections has grown considerably. In 2005, 55 per cent of the population had broadband access at home as against only 7 per cent in 2001. Similarly, the share of enterprises with broadband connections has grown over the years to 82 per cent in 2005.

Number of mobile phone subscriptions now exceeds number of inhabitants

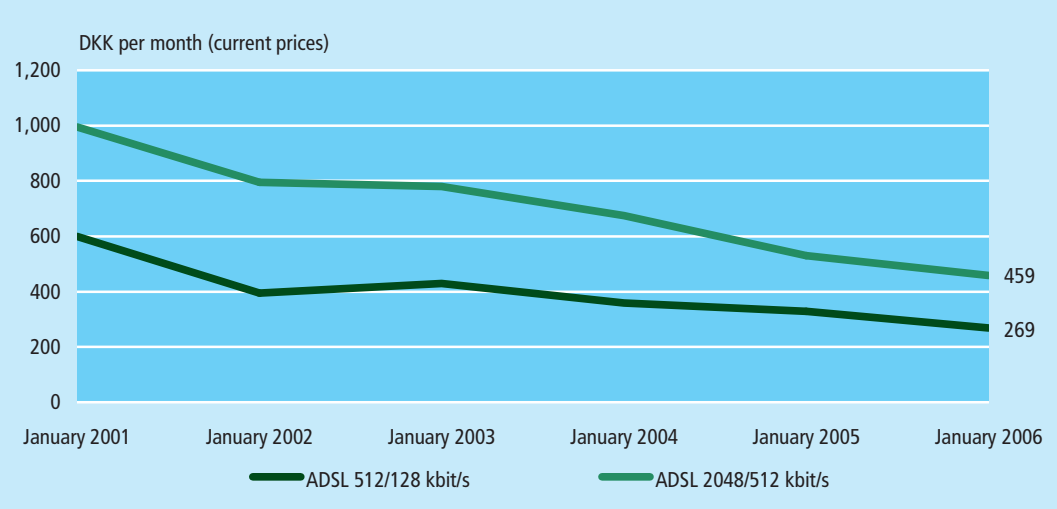
In 2005, the number of mobile phone subscriptions exceeded the number of inhabitants in Denmark. There were thus more than 5.46 million mobile phone subscriptions at the end of 2005. The increase in the number of SMS messages is still very pronounced. The population sent more than six times as many SMS messages in 2005 as in 2001. In 2005, the number of SMS messages exceeded 8.3 billion, while a good 24 million MMS messages were sent.

Table 6.2 **Number of mobile phone subscriptions and SMS and MMS messages sent**

	2001	2002	2003	2004	2005
	1,000 subscriptions - year end				
Subscriptions, total	3 960	4 478	4 767	5 165	5 469
Subscriptions per 100 inhabitants	73.7	83.2	88.3	95.5	100.8
	million messages				
SMS messages sent	1 362	2 012	3 989	6 552	8 379
MMS messages sent	•	•	2.76	12.47	24.04

Note. Subscriptions comprise speech - possibly combined with data traffic in the form of 3G and GPRS.
Source: National IT and Telecom Agency, February 2006.

Figure 6.3 **Development in prices of ADSL**



Note. The data concern the development in the lowest prices. The survey only includes ADSL without separate billing for traffic. ADSL prices are list prices and do not include temporary campaign offers, etc. ADSL prices do not include combined services such as with fixed-line subscriptions. The calculation of the real decrease in prices is based on the net price index of Statistics Denmark.

ADSL prices have dropped by up to 60 per cent

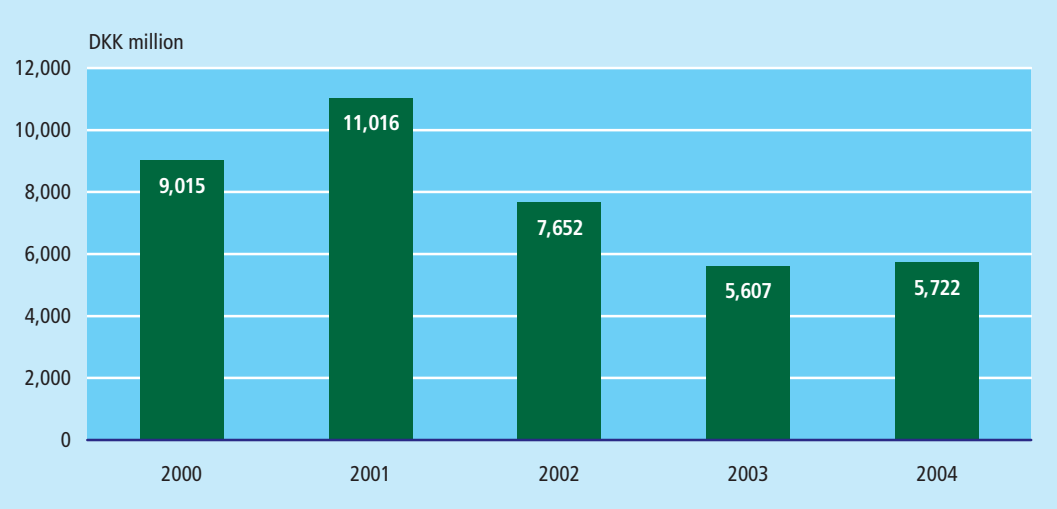
The prices of ADSL 512 kbit/s and ADSL 2 Mbit/s have dropped by up to 60 per cent from 2001 to 2006. The two connections now cost DKK 269 and DKK 459 per quarter, respectively. Alternative broadband solutions provide increasing access to lower broadband prices through cable television networks, fibre-based housing association networks and direct fibre connections (power utility companies) as well as wireless broadband solutions based on WiFi and WiMAX.

Table 6.3 **Development in prices of fixed-line telephony, Internet (dial-up), mobile telephony and ADSL (per quarter). Lowest offers**

	2000	2001	2002	2003	2004	2005	2006	Total price decrease	Real price decrease
	DKK per quarter (current prices)							per cent	
Fixed-line telephony (900 min.)	619	559	563	570	560	557	543	12	23
Mobile telephony (270 min.)	477	400	357	345	244	236	230	52	58
Mobile telephony (450 min.)	574	540	514	367	341	333	129	78	80
Internet, dial-up (600 min.)	83	46	83	83	83	54	54	35	43
	DKK per month (current prices)								
ADSL 512/128 kbit/s	…	599	395	430	359	329	269	55	60
ADSL 2,048/512 kbit/s	…	995	795	780	674	530	459	54	58

Note. The data concern the development in the lowest prices. Quarterly use of fixed-line and mobile telephony includes subscription, call setup charge and traffic. ADSL only includes services without separate billing for traffic. ADSL prices are list prices and do not include temporary campaign offers, etc. ADSL prices do not include combined services such as with fixed-line subscriptions. The calculation of the real decrease in prices is based on the net price index of Statistics Denmark.
Source: National IT and Telecom Agency, February 2006.

Figure 6.4 **Telecom investments in Denmark**



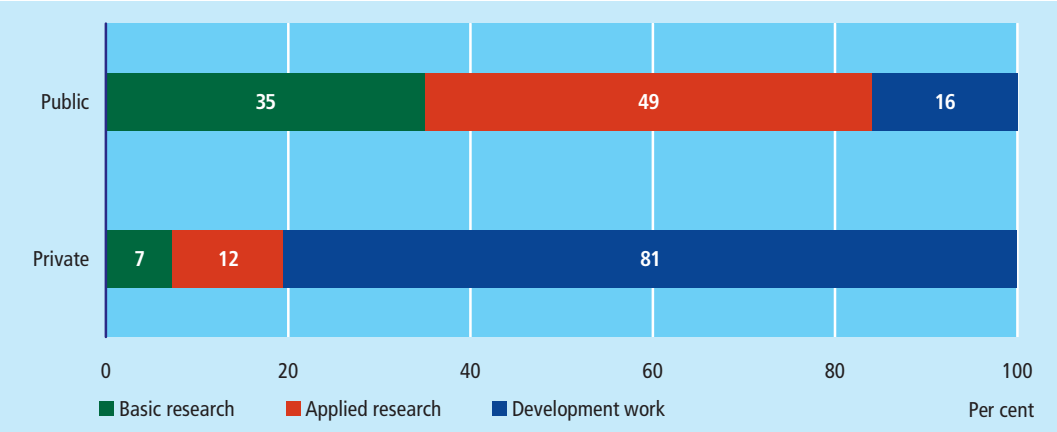
Note. Investments 2001-2004 do not include payment for UMTS licences for 3G mobile telephony.
Source: National IT and Telecom Agency. Tele Yearbook Denmark 2005

Stop to decline in investments

2002 and 2003 saw pronounced drops in the telecommunications sector investments compared with the record level of 2001, when investments amounted to almost DKK 11bn. In 2004, the drop in investments in the telecommunications sector stopped. Investments amounted to DKK 5.7bn in 2004 as against DKK 5.6bn in 2003.

7 ICT research and innovation

Figure 7.1 **Investments in ICT R&D, 2003**



Source: Danish Centre for Studies in Research and Research Policy, 2003.

Private ICT R&D goes to development work

Of private ICT research and development investments, 81 per cent goes to development work, 12 per cent to applied research, and 7 per cent to basic research. The distribution is quite different for public ICT R&D. Of this activity, 48 per cent lies within applied research.

Far higher investments in private

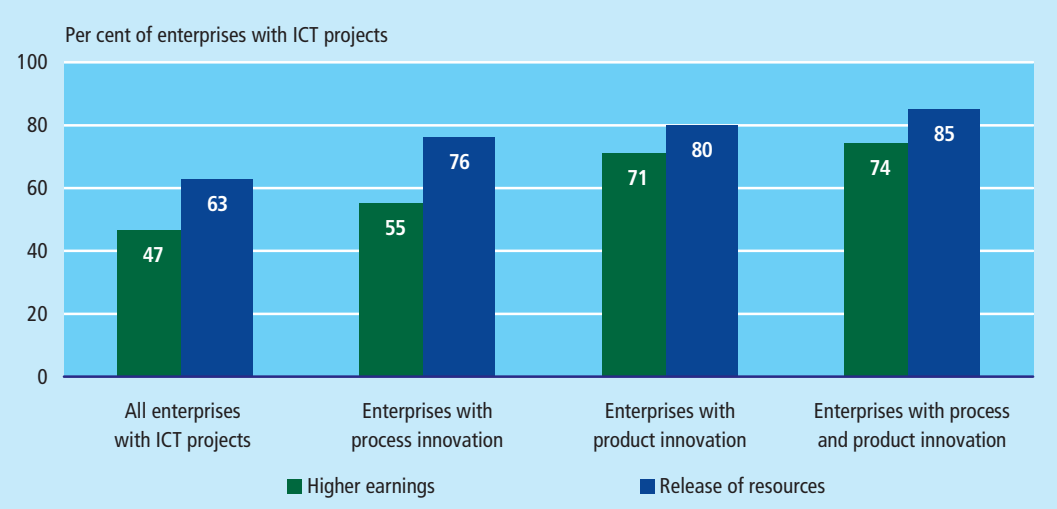
In the private sector, the primary R&D areas are business systems and communication systems with investments of approximately DKK 1.5bn in both areas. In the public sector, databases are the largest R&D area with about DKK 100m. Generally, the level of R&D investments is much lower in the public sector than in the private sector.

Table 7.1 **Largest ICT R&D areas, 2003**

Private	mio. kr.	Public	mio. kr.
Total	**7 476**	**Total**	**677**
Business systems	1 545	Databases, etc.	101
Communication systems	1 473	Communication systems	66
Databases, etc.	704	Usability	54
Devices and appliances	338	Image technology	47
Security systems	238	Devices and appliances	44
Other	3 178	Other	365

Source: Danish Centre for Studies in Research and Research Policy, 2003.

Figure 7.2 **Relation between innovation and earnings in ICT projects, 2005**



Note. The figure only comprises enterprises with ICT projects that have reported to what extent they have had an effect of the last two years' ICT projects (to a high extent, to some extent or to a poor extent/not at all). Process innovation means restructuring and simplification of work routines. Product innovation means the development of new products or services.
Source: Statistics Denmark, ICT use by Danish enterprises, 2005.

Relation between innovation and earnings

The share of enterprises with higher earnings or release of resources as an effect of ICT projects is closely related to the question whether the enterprises have either process or product innovation at the same time.

General effect of ICT projects

Among enterprises with ICT projects, 47 per cent experienced higher earnings from ICT projects to a high extent or to some extent, while 63 per cent experienced release of resources.

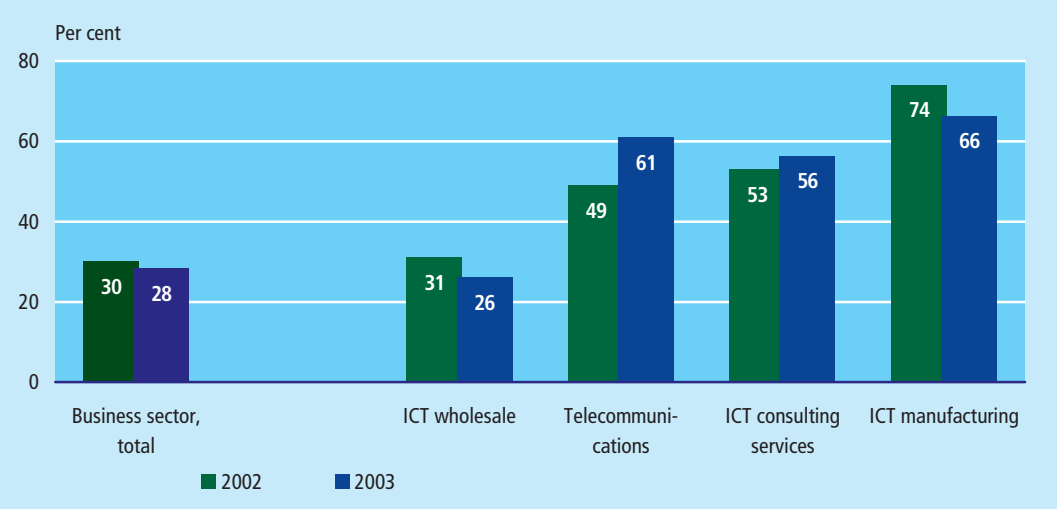
Effect of process or product innovation

Among enterprises with process innovation as a concurrent effect of ICT projects, the share that experienced higher earnings and release of resources was higher, at 55 and 76 per cent, respectively. Of enterprises with resulting product innovation, even more, 71 per cent, experienced higher earnings, and 80 per cent obtained release of resources.

Largest effect with concurrent process and product innovation

Higher earnings and release of resources as a consequence of ICT projects occurred most frequently in the enterprises with both product and process innovation. Of these enterprises, 74 and 85 per cent, respectively, experienced that the ICT projects resulted in higher earnings and release of resources.

Figure 7.3 **Innovation in the ICT sector**



Note. The ICT industries have been stated on the basis of their main activity. The innovation period is the two preceding years.
Source: Danish Centre for Studies in Research and Research Policy, Erhvervslivets forsknings og udviklingsarbejde 2003 (Research and development by trade and industry).

More than half the ICT enterprises are active in terms of innovation

Fifty-two per cent of enterprises in the ICT sector were active in terms of innovation in the period from 2001 to 2003. This is a markedly higher proportion of enterprises than in the business sector in general, where the share is 28 per cent.

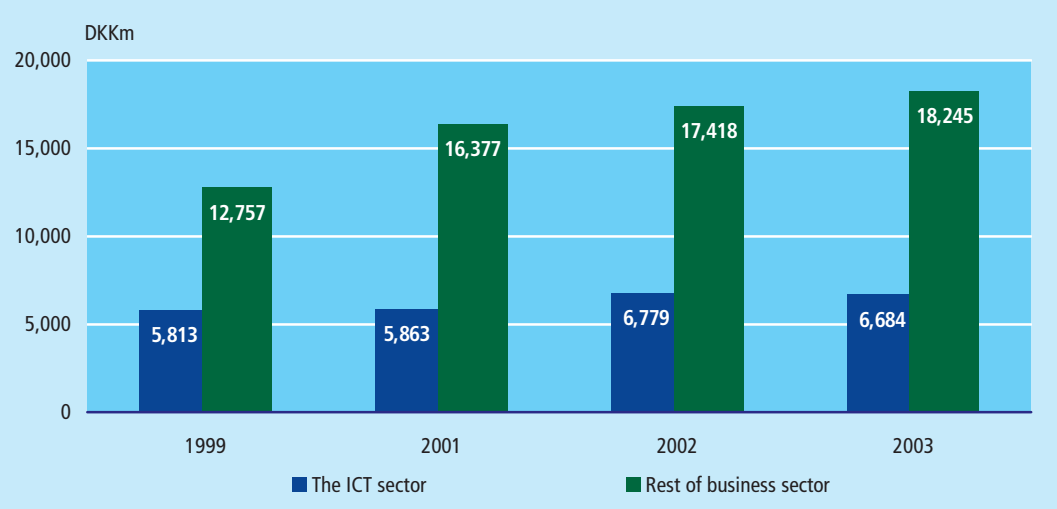
Within Telecommunications, the share of innovative enterprises rose to 61 per cent in 2003. ICT consulting services are on a level with the ICT sector in general, while ICT wholesale is two percentage points below average for the business sector.

Table 7.3 **Innovation activity and innovation expenses in the ICT sector, 2003**

	Innovation active enterprises		Cooperate with:		
	2002	2003	Universities and other higher educational institutions	Competitors and other enterprises of the same industry	Private labs and R&D enterprises
	percentage				
Business sector, total	30	28	60	29	40
ICT manufacturing	74	66	7	3	41
ICT wholesale	31	26	44	85	30
Telecommunciations	49	61	7[1]	3[1]	41[1]
ICT consulting services	53	56			
ICT sector, total	50	52	45	10	27

Note: [1]The figures for Telecommunications and ICT consulting services have been added together out of discretion. The ICT industries have been stated on the basis of their main activity.
Source: Danish Centre for Studies in Research and Research Policy, Innovation statistics 2002 and 2003.

Figure 7.4 **R&D in the ICT sector**



Note. The ICT industries are stated on the basis of their main activity.
Source: Danish Centre for Studies in Research and Research Policy 2003.

R&D expenses of DKK 6.7bn in ICT sector

Expenses for Research and Development (R&D) in the ICT sector amounted to DKK 6.7bn in 2003. Expenses have thus decreased by about DKK 100m since 2002, but are higher than in 1999 and 2001. From 1999 to 2003, R&D expenses in the rest of the business sector rose by 34 per cent. The importance of the ICT sector to total private R&D thus shows a declining trend for the period.

High R&D expenses per ICT sector employee

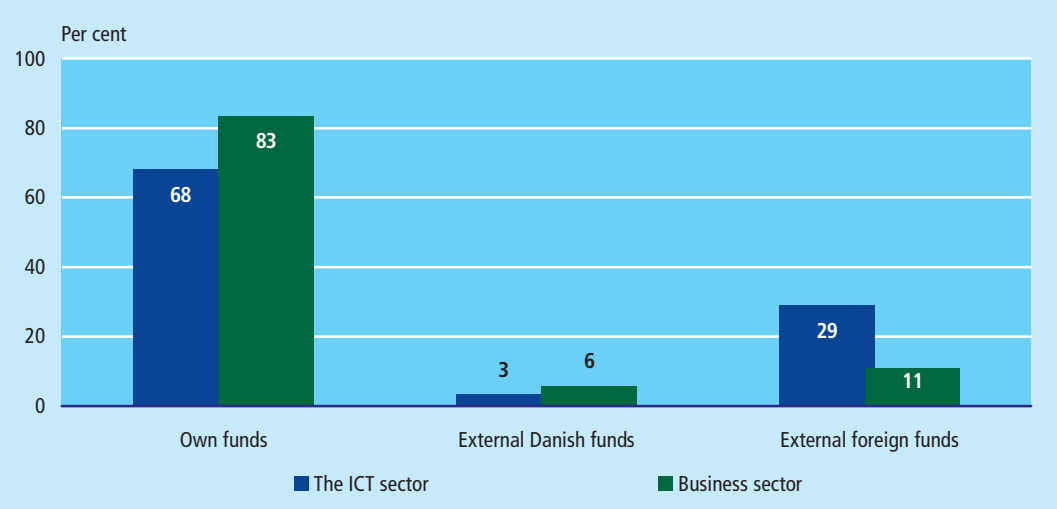
The R&D expenses per employee are very high in the ICT sector - DKK 67,000 per employee in 2003. The level was fairly uniform from 1999 to 2003 apart from the rise of DKK 14,000 from 2001 to 2002 - see table 7.4. The R&D expenses per employee in the ICT sector are almost triple the expenses in the rest of the business sector, which carried out research and development for DKK 25,000 per employee in 2003.

Table 7.4 **R&D expenses per full-time employee in the ICT sector and the business sector**

	1999	2001	2002	2003
	DKK 1,000			
Business sector, total	14	18	19	25
The ICT sector	60	56	70	67

Note. The ICT industries are stated on the basis of their main activity.
Source: Danish Centre for Studies in Research and Research Policy and Statistics Denmark, Enterprise statistics.

Figure 7.5 **Financing of own R&D in the ICT sector and the business sector, 2003**



Source: Danish Centre for Studies in Research and Research Policy, 2003, and Statistics Denmark, Enterprise statistics.

ICT sector finances 68 per cent of its R&D itself

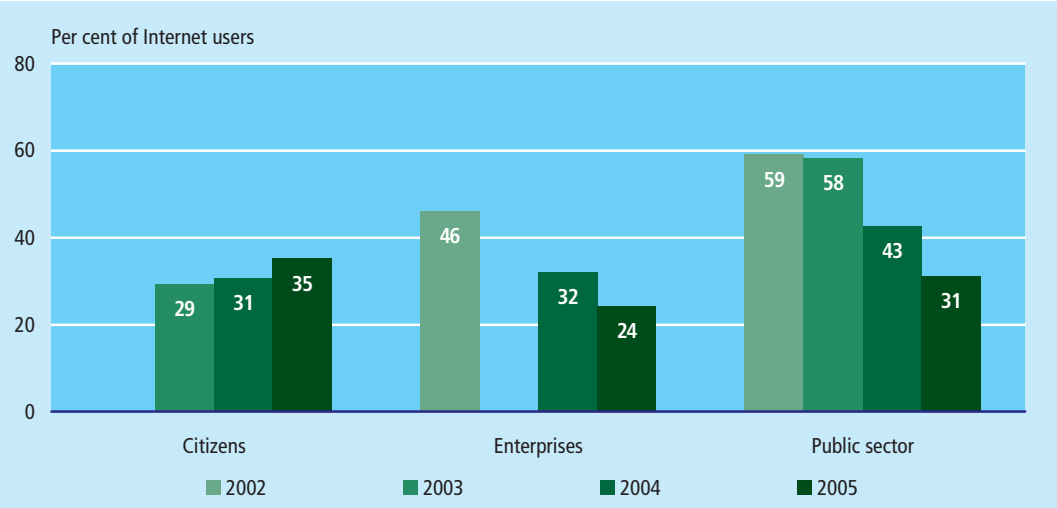
The ICT sector finances 68 per cent of its R&D activities through its own funds, while the figure for the business sector as a whole is 83 per cent. The business sector also has a higher share of financing from other Danish sources (including both private and public sources) than the ICT sector, 6 per cent compared with 3 per cent.

R&D in ICT sector attracts foreign funds

On the other hand, the Danish ICT sector is good at attracting foreign funds for R&D. A full 29 per cent of all R&D in the ICT sector is financed by private or public foreign sources. The same only applies to 11 per cent of total R&D in the business sector.

8. ICT security

Figure 8.1 **Virus attacks on citizens, enterprises and public authorities**

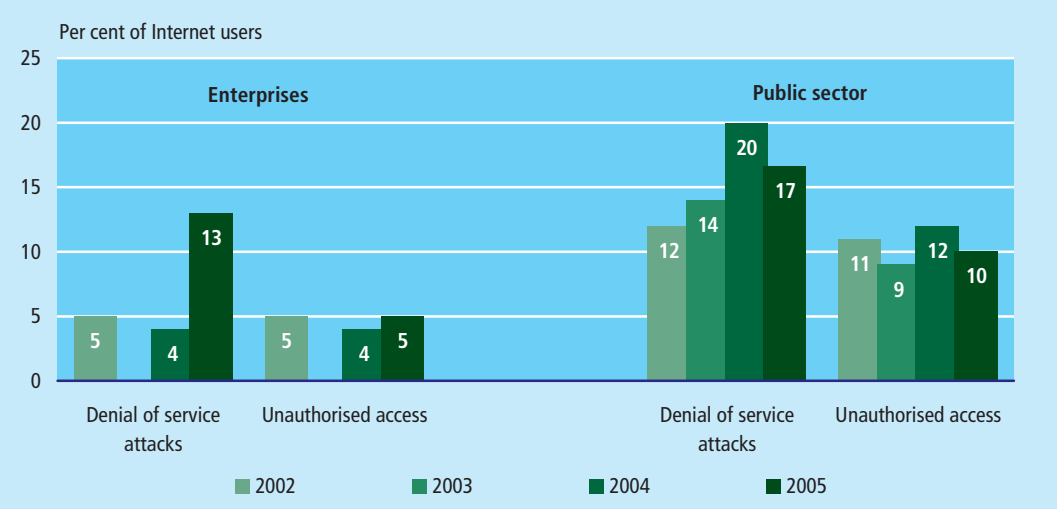


Note. Virus attacks causing loss of data or working hours within the last 12 months. Enterprises and public authorities: Virus attacks of a 'disruptive' or 'severe' nature.
Source: Statistics Denmark. Internet use by the population, ICT use by Danish enterprises, ICT use by the public sector.

Fewer enterprises and public authorities experience virus attacks

Virus attacks are among the most frequent ICT security problems. Among citizens there is a minor increase in the number of virus attacks in the past year that have caused loss of data or working hours. Conversely, the diffusion of disruptive or severe virus attacks on both enterprises and the public sector shows a clear decline from 2002 to 2005.

Figure 8.2 ICT security problems



Note. 'Disruptive' or 'severe' security problems experienced in the last 12 months.
'Denial of service attack': Attempt to disrupt communication to a network by sending superfluous data.
Source: Statistics Denmark. ICT use by Danish enterprises, ICT use by the public sector.

Rise in DOS attacks on enterprises

The share of enterprises that experienced disruptive or severe denial of service attacks rose markedly from 4 per cent in 2004 to 13 per cent in 2005. Occurrences of unauthorised access to the systems or data of enterprises remained at about 5 per cent.

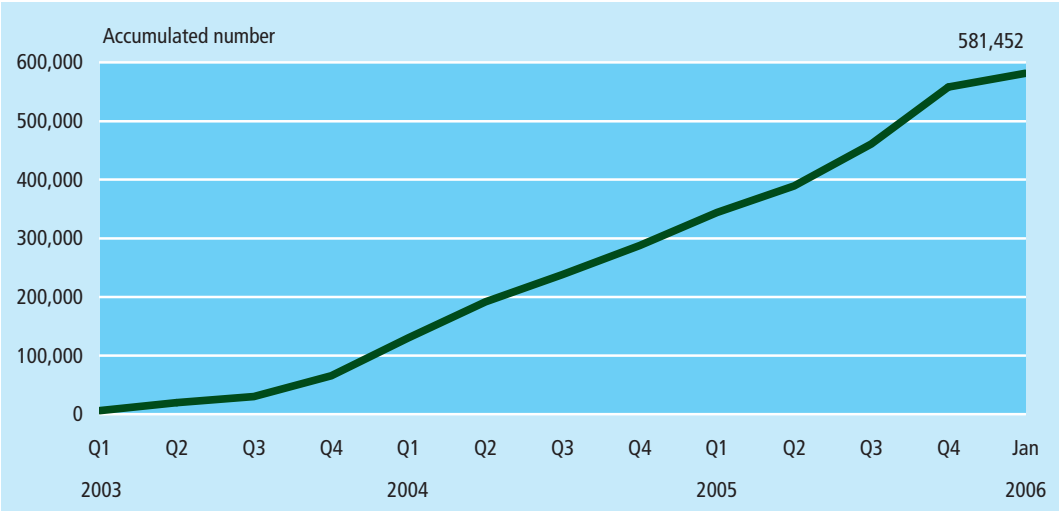
Unauthorised access to data at one in ten public authorities

Among public authorities, 17 per cent experienced denial of service attacks in 2005, a small drop compared with 20 per cent in 2004. Ten per cent were subjected to unauthorised access to systems/data of a disruptive or severe nature, which is about the same as in previous years.

Large organisations most exposed

The difference in the average size of the organisations is one of the reasons why a larger share of authorities experience ICT security problems compared with enterprises.

Figure 8.3 **Number of digital signature certificates issued**



Note. Estimates based on weekly figures. A certificate for digital signature is a program to be installed on the computers of enterprises or private individuals. Digital signatures allow secure communication, i.e., with electronic identification, signature and encryption. Examples of applications of digital signatures are tax returns, access control on web sites, etc.
Source: TDC, 2006.

By January 2006, half a million digital signatures had been issued

The number of certificates issued for digital signatures has increased substantially since the end of 2003. Following a modest beginning in the first half of 2003, the development picked up in the second half-year. In the third and fourth quarters of 2005, the rate of increase rose further, and by the end of January 2006 more than 580,000 digital signature certificates had been issued.

Diffusion is an expression of the number of potential users

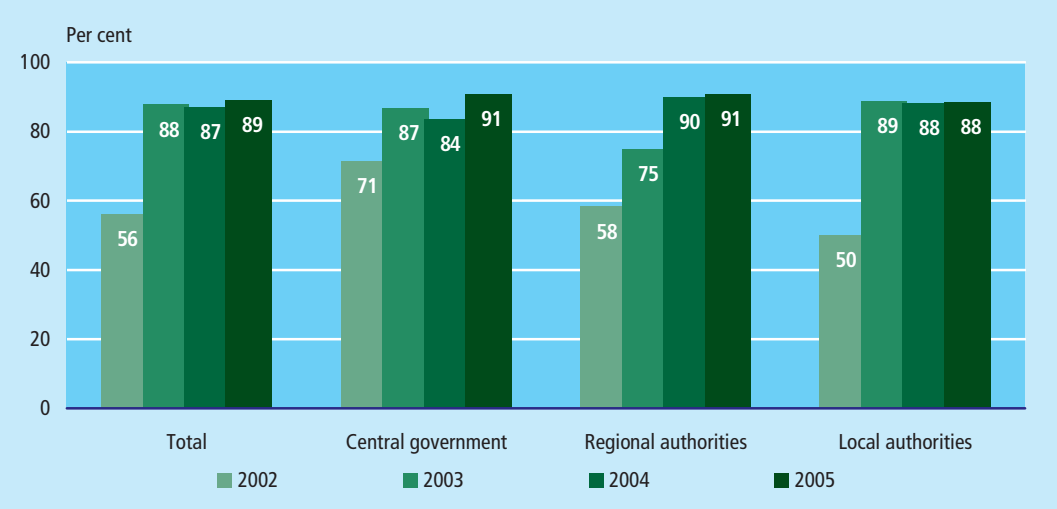
The number of certificates for digital signatures shows how many citizens or enterprises are able to use digital signatures, for instance in relation to enterprises and public authorities.

Table 8.3 **Number of digital signature certificates issued**

	2004				2005				2006
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Jan
	number								
Certificates issued	64 993	61 633	46 474	49 645	55 794	45 251	71 864	96 991	23 657
Accumulated	130 143	191 776	238 250	287 895	343 689	388 940	460 804	557 795	581 452

Note. Estimates based on weekly figures.
Source: TDC, February 2006.

Figure 8.4 **Public authorities with approved ICT security policy**



Note. Approved means approved by the management of the particular authority.
Source: Statistics Denmark, ICT use by the public sector.

The majority have approved ICT security policy

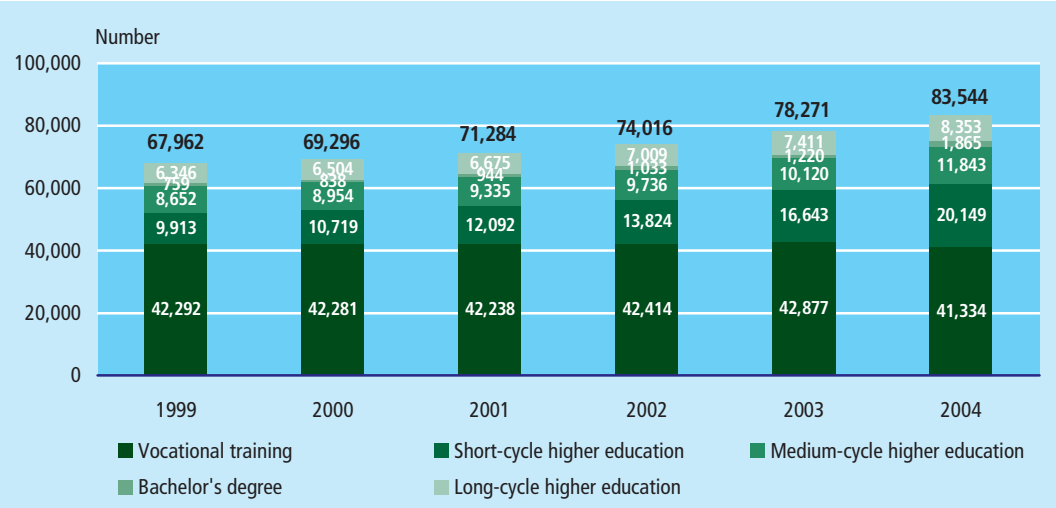
In 2005, nearly nine in ten public authorities had an ICT security policy that had been approved by management. The share has risen quite a bit from 2002 to the next years.

Same diffusion in the three sectors

The rise has occurred particularly in regional and local authorities. The diffusion of an approved ICT security policy in 2005 is largely the same among central government, regional and local authorities as opposed to 2002, when central government was in the lead.

9. E-skills

Figure 9.1 **Persons with ICT education as highest educational level**



Source: Statistics Denmark, Education and employment of the population.

83,500 Danes have ICT education

In 2004, 83,500 Danes had a formal ICT education. This is 21 per cent more than in 2000, when the number was 69,300. Of the total number of persons in 2004 with a formal ICT education, 50 per cent had vocational training as for instance data processing assistance.

93 per cent with medium cycle higher education had jobs in 2004

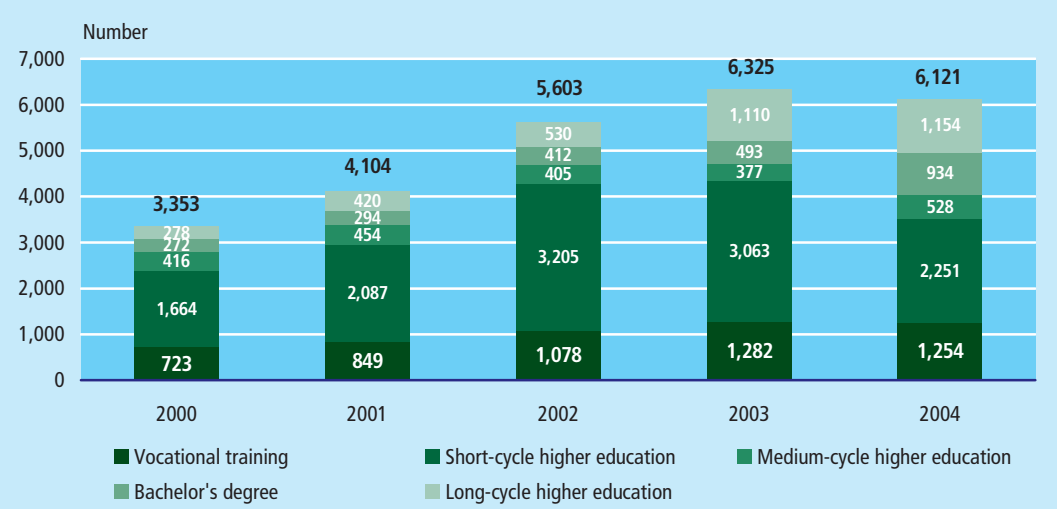
In 2004, 83 per cent of persons with a formal ICT education were employed. The employment rate was highest among persons with medium or long-cycle higher education with 92 and 90 per cent, respectively.

Table 9.1 **Persons with ICT education as highest educational level**

	2000	2001	2002	2003	2004	2000	2001	2002	2003	2004
	employed persons with ICT education					persons with ICT education, total				
Total	**60 315**	**61 926**	**63 910**	**65 543**	**68 966**	**69 296**	**71 284**	**74 016**	**78 271**	**83 544**
Vocational training	34 677	34 441	34 329	33 843	32 295	42 281	42 238	42 414	42 877	41 334
Short-cycle higher education	10 001	11 234	12 625	14 293	16 706	10 719	12 092	13 824	16 643	20 149
Medium-cycle higher edu.	8 608	8 985	9 331	9 427	10 912	8 954	9 335	9 736	10 120	11 843
Bachelor's degree	780	865	919	1 064	1 508	838	944	1 033	1 220	1 865
Long-cycle higher education	6 249	6 401	6 706	6 916	7 545	6 504	6 675	7 009	7 411	8 353

Note: The total number of employed persons also covers persons with ICT education who do not have an ICT-related job.
Source: Statistics Denmark, Education and employment of the population.

Figure 9.2 **Persons with newly completed ICT education**



Source: Statistics Denmark, Integrated student register INTE.

Number of completed ICT educations doubled

The number of students who completed an ICT education almost doubled from 2000 to 2004. 6,121 persons completed an ICT education in 2004 as against 3,353 persons in 2000. However, the number of persons with a newly completed ICT education fell by about 200 persons from 2003 to 2004.

Large decrease in short-cycle higher education

After a strong increase until 2002, the group of short-cycle higher education graduates decreased by about 800 persons from 2003 to 2004. By contrast, the group of bachelor graduates rose steeply from 2003 to 2004: from 493 in 2003 to 934 in 2004.

Increase in long-cycle higher education

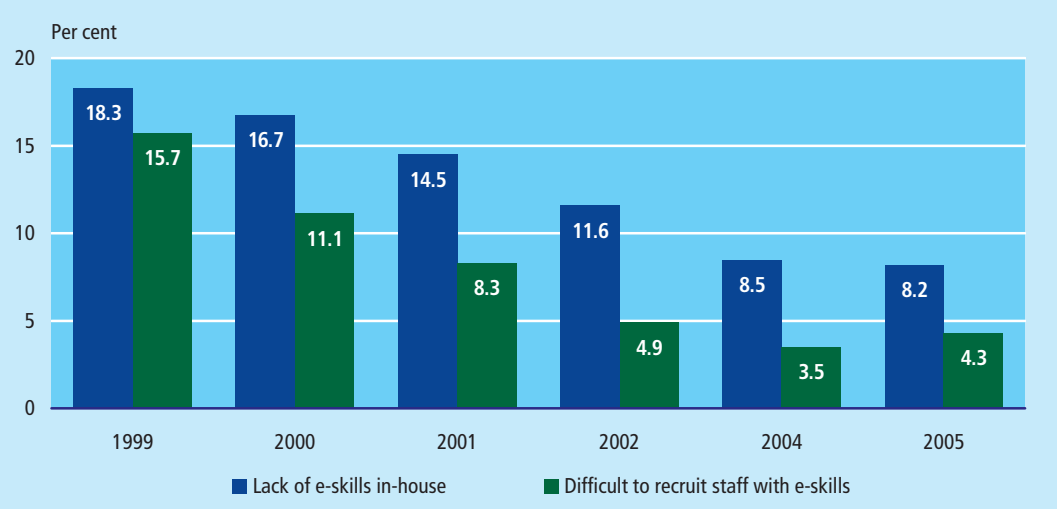
The drop in the uptake of students for the datamatician's programme continued from 2000 until 2005. The uptake for the IT University of Copenhagen and IT University West increased from 474 in 2000 to 595 in 2005.

Table 9.2 **Summer uptake in selected ICT education programmes**

	2000	2001	2002	2003	2004	2005
	number					
Datamaticians	1 940	1 400	940	545	370	353
BSc (Electrical Engineering)	235	156	182	162	156	193
MSc (Computer science)	242	212	233	327	276	223
Students at IT University of Copenhagen	327	346	384	382	302	446
Students at IT University West	147	167	169	170	154	149

Note. The figures for IT University West and the IT University of Copenhagen are the actual uptake figures.
Source: Sekretariatet for den koordinerede tilmelding (KOT) (co-ordinated enrolment secretariat), 2004, IT University of Copenhagen, 2005, and IT University West, 2005.

Figure 9.3 **Lack of e-skills in enterprises**



Note. The figure includes the barriers considered to be of 'high' importance. The assessments are sensitive to current events at the time of the survey, which may contribute to differences between the individual years.
Source: Statistics Denmark, ICT use by Danish enterprises.

Two types of lacking e-skills

The lack of e-skills is among the barriers to ICT usage experienced by enterprises. More specifically, it is about the lack of staff with e-skills in-house and problems of recruiting staff with e-skills.

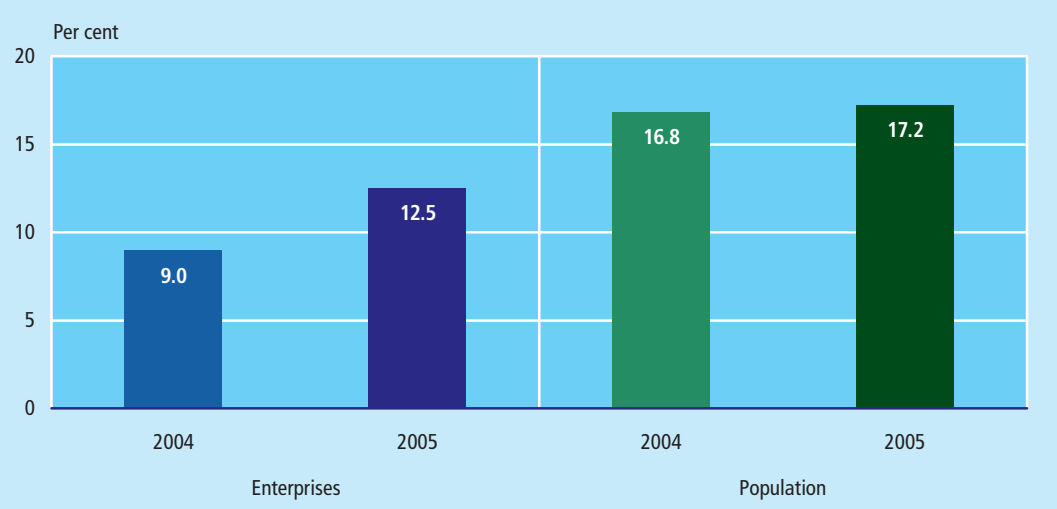
Lack of e-skills becoming less important

The lack of in-house e-skills is more frequent than recruitment problems. In 2005, 8 per cent of Danish enterprises found that the lack of staff with e-skills was of high importance, while only 4 per cent found that recruiting staff with e-skills was a major problem.

Few enterprises have problems of recruiting staff with e-skills

The importance of both barriers to the enterprises has decreased considerably from 1999 to 2005. Particularly regarding difficulty in recruiting staff with e-skills, the figure dropped from 16 per cent of enterprises in 1999 to 4 per cent in 2005.

Figure 9.4 **Use of the Internet for educational purposes**



Note. Enterprises were asked whether they used the Internet for training of staff. Individuals were asked whether they had used the Internet for education and training within the last month.
Source: Statistics Denmark, ICT use by Danish enterprises and Internet use by the population.

17 per cent of Danes use Internet for education

In 2005, 17 per cent of the population had used the Internet within the last month for purposes relating to education and training. Correspondingly, 13 per cent of enterprises used the Internet for training of their staff in 2005.

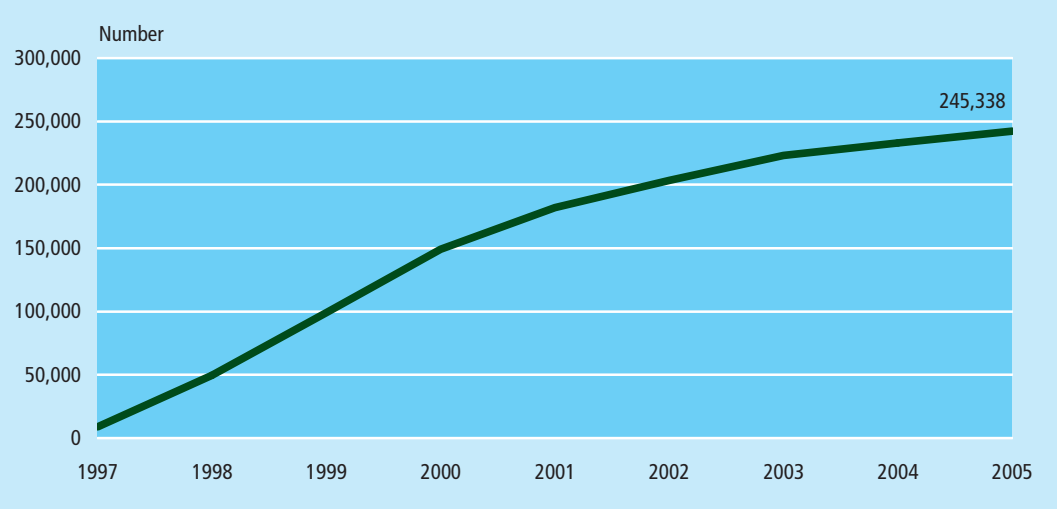
Increase mainly in enterprises

The use of the Internet for educational purposes has increased particularly for enterprises. From 2004 to 2005 the share rose from 9 to 13 per cent. The share of the population has only risen slightly from 2004 to 2005.

Most training activities outside enterprises

One reason why the population accounts for a higher figure for Internet use for education and training than the enterprises is that the students use the Internet to a wide extent, but typically have little or no connection with the enterprises' training activities.

Figure 9.5 **Computer driving licences issued**



Source: Dansk IT (Danish IT society).

In 2005 245,300 computer driving licences had been issued

The number of computer driving licences, the Danish PC-kørekort®, has increased since the beginning of 1997 from 8,800 to about 245,300 driving licences in 2005. PC-kørekort® is an internationally recognised licence and comprises training in seven different computer skills. The number of driving licences issued peaked in 2000, when 50,000 driving licences were issued. Since then, the annual number has decreased, probably due to generally improved computer skills among the population. In 2005, nearly 12,000 computer driving licences were issued.

423 job cards to ICT experts

The job card scheme is to ensure that Denmark has an adequate number of experts in the labour market. Since 2003, it has therefore been possible to obtain Danish work permits for foreign ICT experts under lenient rules. In 2005, 423 ICT job cards were issued, accounting for 46 per cent of all job cards in 2005.

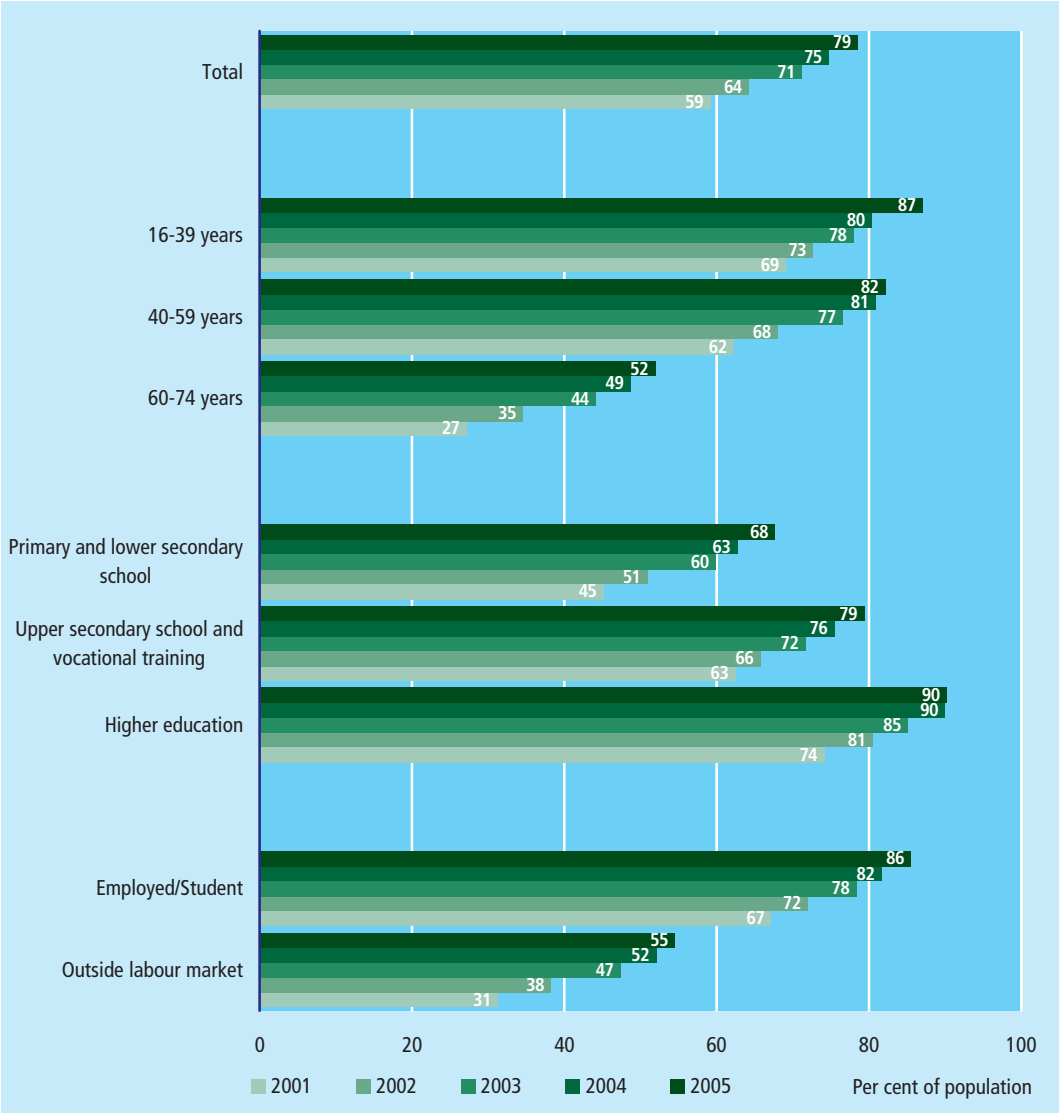
Table 9.5 **Number of job cards issued to foreign experts**

	2003		2004		2005	
	H1	H2	H1	H2	H1	H2
	number					
All experts	661	-	-	734	332	580
ICT experts	126	-	-	164	235	188

Source: Danish Immigration Service.

10. ICT for all

Figure 10.1 **Internet access at home among the population**



Source: Statistics Denmark, Internet use by the population.

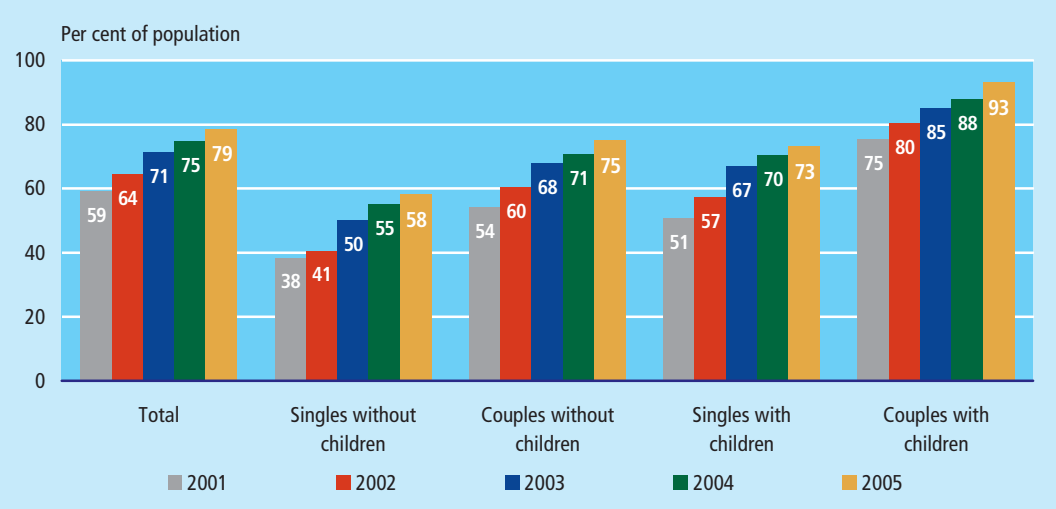
Marked increase among 60 to 74-year-olds

Over the last five years an ever increasing number of the Danes have gained Internet access at home. In 2005, 79 per cent of the population had Internet access at home compared with 59 per cent in 2001. All age groups have seen a steady increase in Internet access over the years, the largest being among 60 to 74-year-olds.

Largest share for people in employment

Persons with a long-cycle higher education, people in employment and students have the highest shares for Internet access at home, see the figure.

Figure 10.2 **Household access to the Internet at home by type of household**



Source: Statistics Denmark, Internet use by the population.

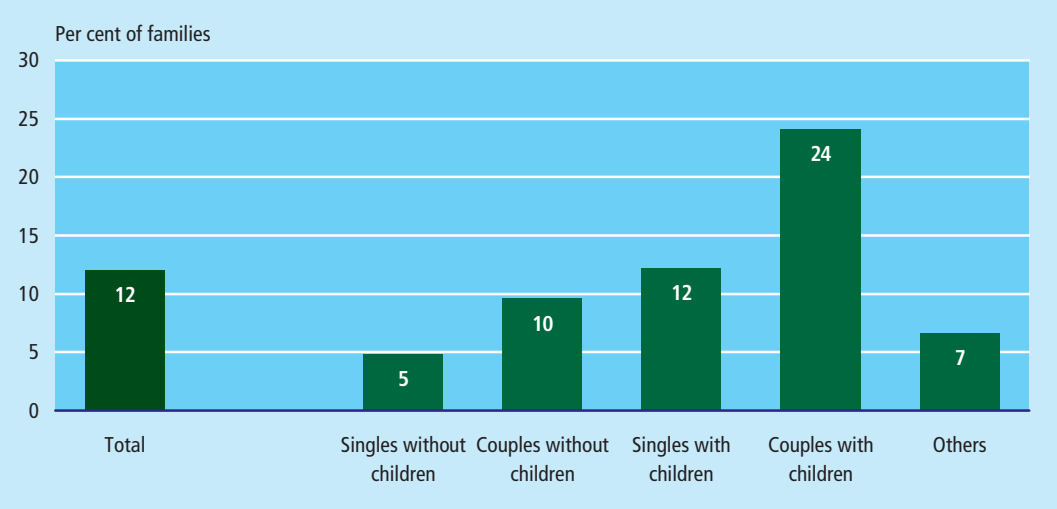
Highest shares for couples with and without children

The share of the population with Internet access at home is higher among households with couples than among singles whether or not there are any children in the household. This applies to all the years from 2001 to 2005.

Nine in ten couples with children had Internet access at home in 2005

In 2005, a full 93 per cent of the population living in households with two adults and children had Internet access at home, followed by 75 per cent of households with two adults and no children. Fifty-eight per cent of singles with no children had Internet access at home in 2005 compared to 73 per cent of singles with children.

Figure 10.3 **Employer-paid Internet connection at home, 2005**

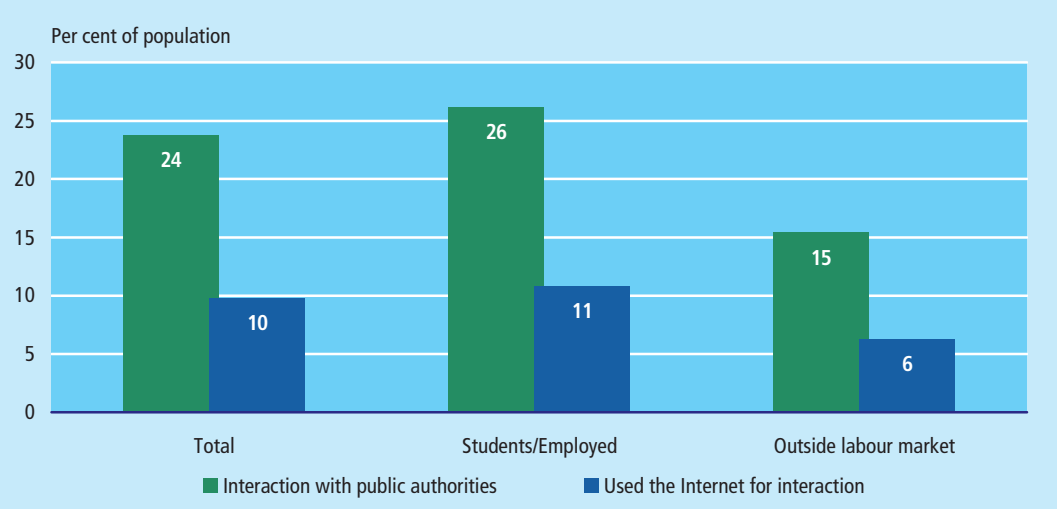


Source: Statistics Denmark, Internet use by the population.

One in four couples with children has a paid Internet connection

In 2005, 12 per cent of all households had an Internet connection at home paid by the employer. Households with children had the highest shares, see the figure. A full 24 per cent of couples with children make use of such a scheme.

Figure 10.4 **The population's communication with public authorities over the Internet last month, 2005**



Source: Statistics Denmark, Internet use by the population.

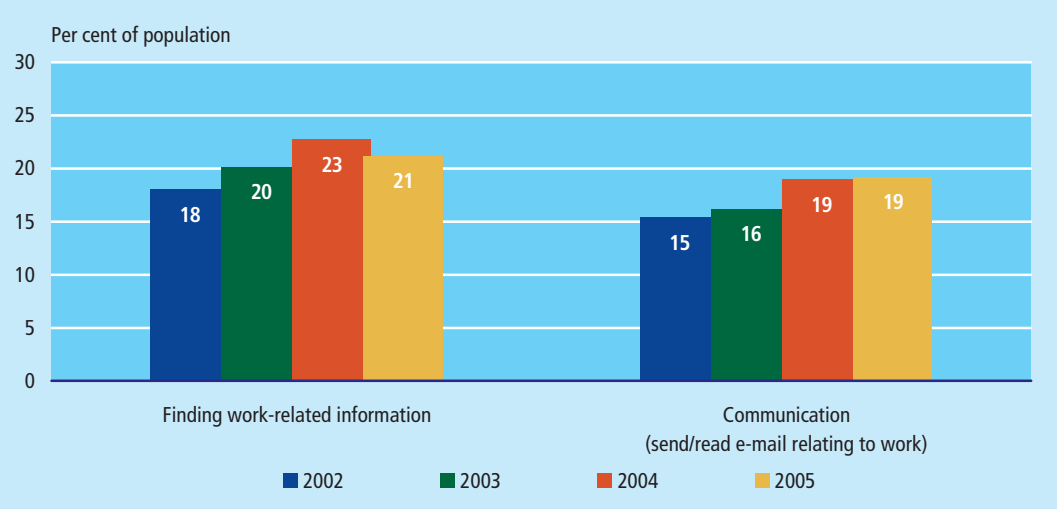
One in four interacted with public authorities the last month

In 2005, 24 per cent of the population had interacted with public authorities within the last month. Of this share, 41 per cent used the Internet to interact with public authorities, corresponding to 10 per cent of the population. Interaction with public authorities covers personal appearance, telephone contact or other form of contact with central government, regional or local authorities.

Equal distribution for Internet use by employed persons and persons outside the labour market

Of students/employed persons, 26 per cent interacted with public authorities compared with 15 per cent of people outside the labour market. The share of those who used the Internet to interact with public authorities was just as large for students/employed people and for people outside the labour market, at 41 per cent.

Figure 10.5 **Work-related purposes of Internet use outside the workplace**



Source: Statistics Denmark, Internet use by the population.

Possibility of enhanced flexibility

Access to the Internet offers enhanced flexibility; thus, Danes use the Internet outside their workplaces for work-related purposes.

One in five searched for information in connection with their jobs in 2005

The most frequent work-related purpose for which most Danes use the Internet outside the workplace is to search for information in connection with their jobs. In 2005, 21 per cent of the population had used the Internet for that purpose within the last month. This is a minor drop from 23 per cent in 2004.

More people send/read e-mails outside the workplace

The second most frequent purpose of using the Internet outside the workplace is to send/read e-mails relating to the job. In 2004 and 2005, 19 per cent of the population used the Internet for that purpose outside their workplace.