Statistics in focus

INDUSTRY, TRADE AND SERVICES

POPULATION AND SOCIAL CONDITIONS

SCIENCE AND TECHNOLOGY

25/2005

Author

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Internet use in Europe: security and trust

Highlights

- Buying over the Internet is perceived as relatively safe: most 'e-shoppers' didn't report any problems. Those who did mostly mentioned 'uncertainty concerning guarantees' and 'speed of delivery longer than indicated' as the problem.
- Among those who never bought via the Internet, 42% (at EU-15 level) mentioned security concerns and worries about giving credit card details over the Internet; 60% prefer to shop in person.
- 'Spam' was a widespread problem in 2004: between 25% (Portugal) and 58% (Germany) of Internet users have experienced unsolicited e-mail; fraudulent payment card use was reported by less than 2% of Internet users, except for the United Kingdom.
- Virus checking software was used in virtually all enterprises, regardless of their size; more sophisticated security devices are more common in larger companies.
- Certain countries have a surprisingly high proportion of enterprises that are still without any computer and network security devices.
- A fairly high proportion of enterprises reported virus attacks; the situation differs by country rather than by economic activity.

Contents

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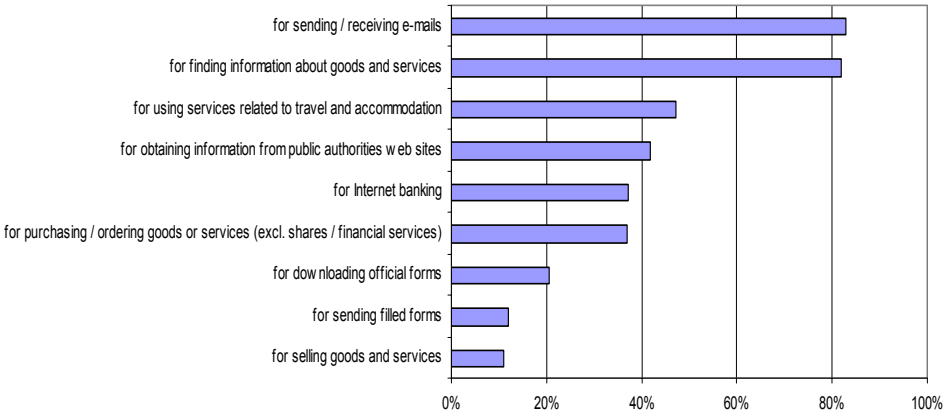
The broad use of information and communication technologies (ICT) continues to spread: in 2004, every second European (49.8% – EU-25) had used the Internet in the last 12 months; close to 54% of European Internet users linked up to the Internet every day or almost every day and more than 82% connect to the Web at least once a week. The Internet offers an increasing variety of functionalities, but at the same time users are faced with problems such as computer virus attacks, spam or the fraudulent use of information given over the Internet.

Security and trust in Internet usage is difficult to quantify as it has a highly subjective component. In this publication, security and trust is indirectly measured through an analysis of behaviour and use. Furthermore, the figures presented in this publication (survey-based, see Methodological Notes) may be biased due to a low awareness of the respondents with regards to the risks of certain Internet usage aspects.

Graph 1: Use of internet, by type of use (% of individuals who used Internet in the last 3 months), EU-15 - 2003



Source: Eurostat, Community survey on ICT usage in households and by individuals.

Factors testifying that the general public is getting familiar with information and communication technologies can be seen in Graph 1 where the various types of Internet use in 2003 are listed.

Internet use for purchase or banking influenced by educational level

Table 1 gives a picture of Internet access by socio-professional status in 2004. The percentage of retired persons having accessed the Internet at least once a week is around 30% in Denmark and Sweden. Although this rate remains very heterogeneous at EU-25 level (between 8% and 33%), it nevertheless shows that the Internet opens up to a population category known to be quite reluctant to use ICT.

Among the other socio-professional categories, Internet access rates are high, especially amongst students (ranging from 42% to 96%), for whom Internet is often a part of every day's life. Amongst those in employment, more and more individuals connect to Internet at least once a week, although the rate amongst employees varied from 23% in Turkey to more than 70% in the Nordic countries of Denmark, Finland, Sweden and Iceland (see Table 1).

When considering purchasing goods and services over the Internet, it appears that the mistrust towards on-line payment phases out as Internet users become accustomed to on-line purchasing. In 2004, the proportion of individuals having paid for their purchases on-line by giving their credit card details has more than doubled in Iceland, and strongly progressed in most EU countries (see Graph 2).

However, the individual behaviour is directly linked to the educational level: Graph 3 illustrates that on-line ordering and Internet banking is more frequent among persons having a high educational background — a situation valid for all countries for which data is available.

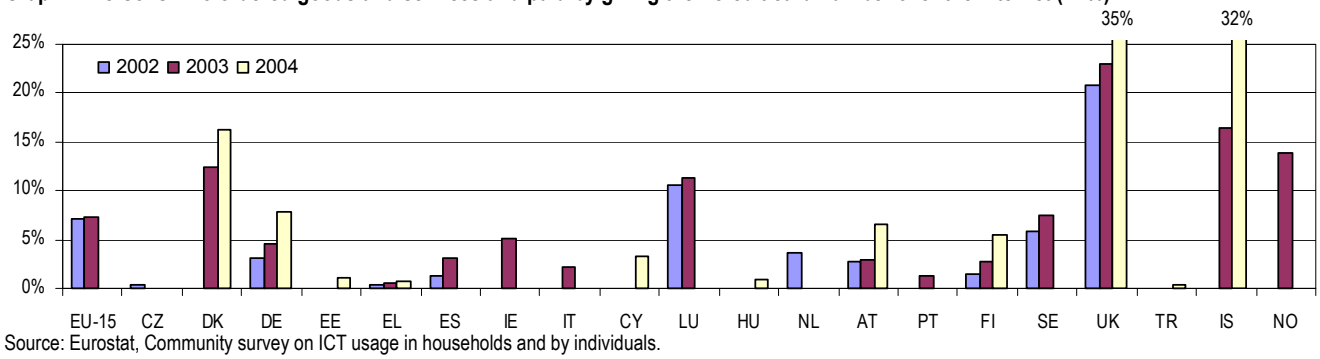
Table 1: Share of individuals who accessed, in the last 3 months, the Internet on average at least once a week, (in %) - 2004

	Retired	Employees	Students	Unemployed
EU-15	10.6	:	68.3	:
CZ	1.3	:	:	:
DK	29.2	77.0	89.4	56.3
DE	18.0	60.5	84.0	41.7
EE	3.3	52.4	88.6	26.7
EL	0.8	25.2	45.7	11.5
ES	3.7	:	:	:
IE	5.8	:	42.2	:
IT	4.3	34.8	61.8	23.7
CY	6.7	31.3	73.0	39.1
LT	0.9	29.8	76.9	6.2
LU	10.1	:	90.4	:
HU	1.3	25.6	70.0	:
AT	11.7	56.8	89.4	37.8
PT	:	:	71.0	:
SI	:	42.3	81.8	:
FI	14.2	74.6	93.4	48.8
SE	32.9	79.3	94.2	80.7
UK	16.8	57.6	84.4	:
TR	2.1	23.5	44.2	16.6
IS	24.9	78.9	96.3	:
NO	23.7	:	90.7	:

Note: EU-15,CZ, ES, IE, LU, PT, NO: 2003

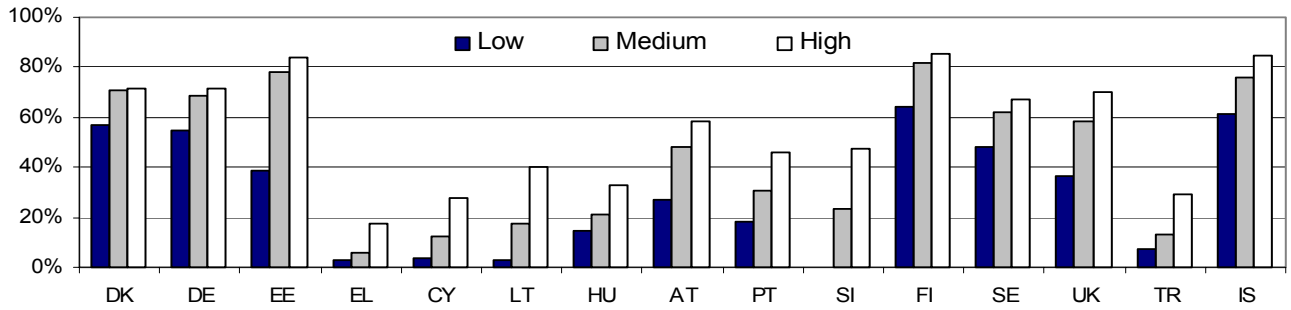
Source: Eurostat, Community survey on ICT usage in households and by individuals..

Graph 2: Persons who ordered goods and services and paid by giving their credit card number over the internet (in %)



Source: Eurostat, Community survey on ICT usage in households and by individuals.

Graph 3: Persons that used Internet, in the last 3 months, for ordering, selling or banking — by educational level* (%) - 2004



* See Methodological Notes.

Source: Eurostat, Community survey on ICT usage in households and by individuals.

Most e-shoppers didn't report any problems

As shown in Table 2, only a relatively small proportion of Europeans who purchased over the Internet encountered problems in 2004. Two types of problems can be distinguished: the first appears when ordering or purchasing on the Internet, the second when it comes to physically obtaining the goods or articles. When ordering, less than 4% of Internet customers encountered problems linked to the lack of security of payments.

After purchasing, between 2% and 6% of the Internet customers complained about difficulties in redress or to repair. 'Uncertainty concerning guarantees' was relatively often mentioned in Cyprus (12%) and Slovenia (8%), but noticeably less in Germany (2%). Up to 5% have experienced the reception of damaged goods (Luxembourg, United Kingdom) or complained about the delivery costs being higher than indicated during ordering (Turkey). The rates are higher with regards to delivery problems (ranging from 0.8% to 15.6%), but nevertheless low in absolute terms in most countries.

Table 2: Problems encountered with purchases over the internet (in % of individuals who ordered goods or services over the Internet) - 2004

	DE	EL	IE	CY	LU	PT	SI	FI	UK	TR
Complaints and redress were difficult	:	2.1	2.2	6.2	2.2	:	2.2	:	3.8	6.4
Damaged goods delivered	:	:	1.3	1.6	4.9	:	3.0	:	5.1	3.9
Delivery costs higher than indicated	:	1.9	3.6	2.1	2.1	:	1.2	1.6	3.2	4.6
Uncertainty concerning guarantees	2.3	5.5	3.5	12.0	4.0	:	8.4	4.5	5.5	7.4
Final price higher than indicated	:	3.3	2.1	4.1	1.9	:	1.3	0.2	:	4.1
No satisfactory response received after complaint	:	1.4	3.0	3.3	0.7	:	1.5	:	4.1	7.6
Lack of security of payments	:	0.6	1.4	1.6	1.5	:	3.7	:	:	3.1
Speed of delivery longer than indicated	6.5	3.4	6.9	11.9	9.4	6.7	5.1	14.7	15.6	9.0
Wrong goods delivered	4.0	:	2.7	0.8	3.2	:	1.4	3.7	10.5	1.1

Note: EL, IE, LU, UK: 2003

Source: Eurostat, Community survey on ICT usage in households and by individuals.

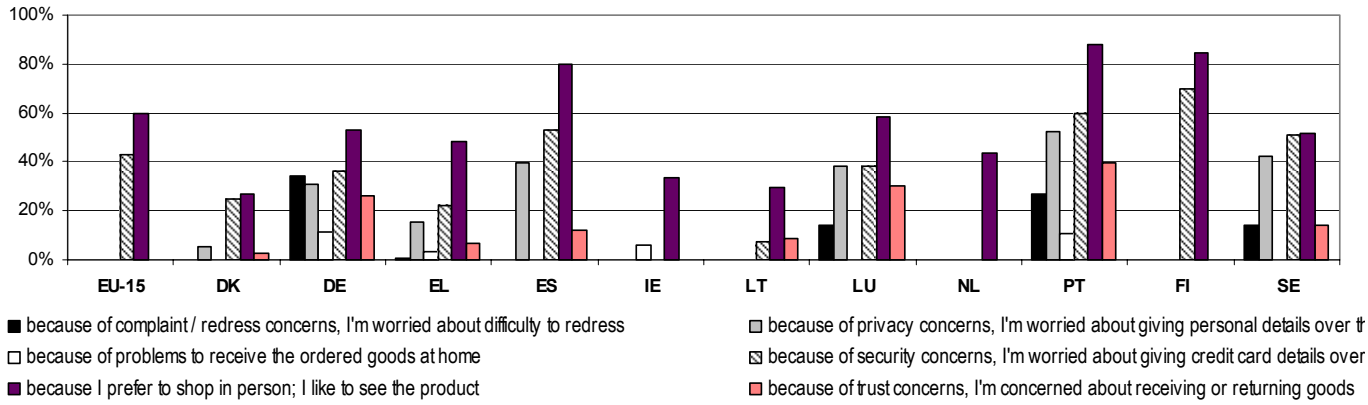
The way people shop changes only slowly

Even if the adoption of electronic communication tools is relatively fast throughout Europe, the practices of consumption still evolve slowly. Indeed, when European citizens are asked why they don't order goods or services via the Internet, between 25% (Denmark) and 90% (Portugal) of the individuals surveyed answered that they preferred to go shop in person and to see the product. This is the most frequently given reason, regardless of the country observed. Between 10% (Latvia) and 70% (Finland) worry about security problems on Internet and are reluctant to disclose their credit card number on-line. Noticeable differences also occur when it comes to the supply of personal details over the Internet: whereas in Portugal, this reason is mentioned by 52% of those internet users that never bought anything over the web, it appears only to be the case for only 5.4% in Denmark.

Graph 4 illustrates clearly that these three elements are the main concerns in the individual countries.

Conversely, Internet "non-buyers" rate worries about not receiving the ordered goods at home or concerns on returning goods at a much lower level. However, available data suggest that "problems receiving ordered goods at home" are generally rated lower than trust concerns "about receiving or returning goods". This suggests that potential problems of warranty and the often unknown physical location for getting articles exchanged or repaired still constitute a blocking factor.

Graph 4: Reasons for not buying via the Internet (% of individuals who never ordered goods or services) — 2003



Source: Eurostat, Community survey on ICT usage in households and by individuals.

Security: awareness of the need for increased protection

The installation and usage of protection tools against viruses, spam etc. on personal computers is becoming widespread in all European countries in recent years, but differences remain (see Table 3). More than a quarter of individual Internet users have installed a firewall in Denmark, Germany, Hungary, the United Kingdom and Iceland. Likewise, the use of computer virus checking programmes is widespread too: the proportion of Internet users having installed this protection device in the 3 months prior to the survey ranged from 18% in Lithuania to nearly 60% in Luxembourg. Estonia was the exception, at 1%.

More particularly, and in the meantime a witness of an increased sensibility in this domain, the percentage of Internet users who recently installed or updated their antivirus software (including an automatic update) or installed/upgraded a hardware or software firewall exceeded 50% in 12 out of 15 countries for which data are available. It reached 83% in Cyprus.

On-line authentication mechanisms like the electronic signature, the use of PIN codes or passwords are also increasingly used. The share of Internet users having used those mechanisms recently is particularly high in Slovenia, Norway, Ireland, Finland and Denmark. Conversely, on-line authentication was less used by Internet users in Estonia, Greece, Lithuania and Turkey.

Table 3: Measures taken in the last three months to increase security when using the Internet (in % of Internet users) - 2004

	"I have installed a virus checking program"	"I have updated a virus checking program (including automatic updating)"	"I have installed or upgraded a hardware or software firewall"	"I have installed or updated a virus checking program or installed or upgraded a hardware or software firewall"	"I have used on-line authentication (password, PIN, digital signature)"
DK	23.4	60.2	25.5	65.2	64.2
DE	39.1	46.4	25.3	54.5	29.1
EE	1.0	0.5	0.1	1.0	0.5
EL	43.0	30.7	13.0	52.1	18.8
IE	30.8	37.8	:	:	68.7
CY	27.9	77.0	9.9	82.5	38.5
LT	18.4	18.5	3.5	26.2	19.8
LU	58.4	57.5	:	:	41.3
HU	54.9	45.6	28.4	63.4	28.0
AT	33.8	42.0	18.5	52.3	28.0
PT	36.4	43.7	18.4	50.4	29.5
SI	37.2	48.1	13.2	57.9	81.0
FI	26.5	47.6	15.0	50.8	66.4
SE	25.4	48.1	20.5	54.2	51.0
UK	38.7	42.2	26.0	58.1	31.6
TR	26.9	23.5	7.7	31.7	10.9
IS	50.0	61.9	26.5	72.4	64.3
NO	25.5	44.0	:	:	72.1

Note: IE, LU, NO: 2003

Source: Eurostat, Community survey on ICT usage in households and by individuals.

Preventative action as described above is one thing; problems actually met are another. These problems appear according to the type of Internet practice: e-mail and on-line purchase. One of the problems most frequently met by European Internet users in 2004 was the loss of data and time following an infection of their PC by a virus (see Table 4). The proportion of Internet users having experienced this type of problem (often spread through e-mail with 'infected' attachments) varied from 12% in Ireland to about 40% in Lithuania.

Spam (unsolicited e-mail) represents another major problem: in many countries, the majority of internet users have experienced this: 81 % of Internet users in Iceland reported to have suffered from spam and the share is well above 40 % for the majority of the countries for which data are available. While the problem of spam maybe considered as disturbing, it does not have the same impact as fraudulent payment card use or a loss of information.

Table 4: Security problems of individuals, by category of problem (in % of the individuals who used Internet in the last 12 months) — 2004

	Fraudulent payment (credit or debit) card use	Abuse of personal information sent on the Internet	Spam - Unsolicited emails sent to me	Computer virus resulting in loss of information or time
CZ	0.1	0.1	:	15.3
DK	1.1	1.1	54.3	30.1
DE	0.0	2.7	58.3	35.0
EE	0.1	0.0	54.4	19.6
EL	0.1	0.8	27.0	12.0
IE	0.7	2.4	:	11.6
CY	0.9	4.0	42.5	27.0
LT	0.2	0.8	34.3	39.8
LU	1.5	4.1	:	24.9
HU	0.4	1.8	45.2	34.1
AT	1.0	2.1	44.5	29.8
PT	0.0	1.4	25.2	17.5
SI	0.7	1.4	53.5	33.9
FI	0.0	4.5	46.9	26.6
SE	1.2	7.3	39.5	24.7
UK	2.4	3.3	50.6	29.8
TR	1.0	2.1	20.2	21.8
IS	2.8	3.1	80.9	26.8
NO	1.4	3.4	:	19.6

Note: CZ, IE, LU, NO: 2003

Source: Eurostat, Community survey on ICT usage in households and by individuals.

Potentially more disturbing as it touches security and individual privacy are the fraudulent use of payment cards and the abuse of personal information sent over the Internet. In most cases, the proportion of Internet users having experienced fraudulent payment card use stays well under 2%, except for Iceland (2.8 %) and the United Kingdom (2.4 %). It should however be noted that this percentage relates to all individual users, and not only to those who actually purchased or ordered goods or services. The abuse of personal information sent over the Internet concerns relatively few Internet users: for most countries, under 4% of the users mentioned this problem, except for Sweden, where over 7% were bothered by this aspect.

Security facilities in enterprises: influenced by the cost of implementation

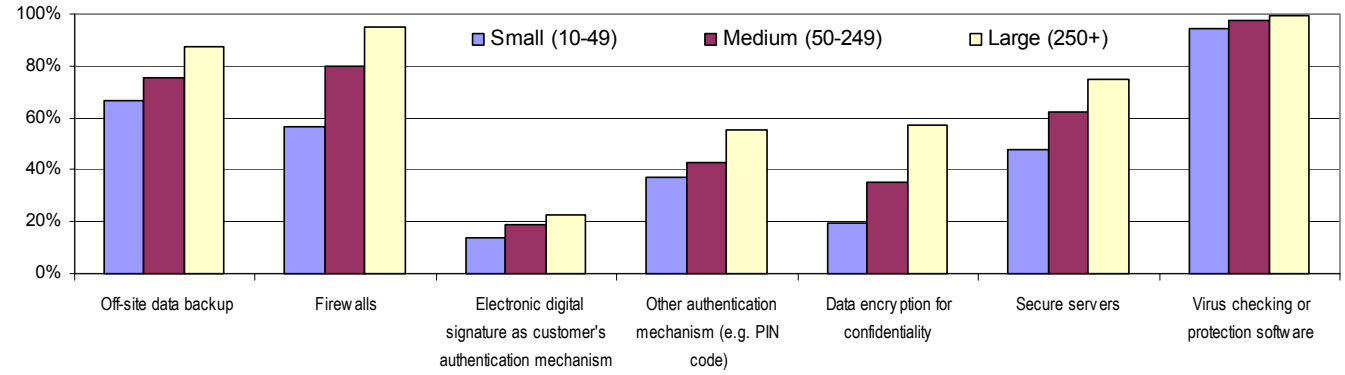
Enterprises increasingly invest (voluntarily or not) in the securing of their computer systems and networks. The financial resources dedicated can be considerable. Computer system protection devices fall into several families, depending on the element in the data transmission chain to protect. It comes as no surprise that a higher proportion of large enterprises use protection devices than smaller ones.

Classic and relatively inexpensive equipment such as virus checking or protection software is widespread, regardless of the size of the enterprise. Conversely, electronic digital signature as an authentication mechanism is relatively new and not yet wide spread. The disparity according to enterprise size remains small.

Regardless of the company's size and disregarding virus checking software, used by over 90% of enterprises, the two main protection systems installed (between 60% and 80% of enterprises) are data back-up systems and firewalls, although the latter is less common among small enterprises.

Systems of authentication, electronic signatures and encryptions are less widespread, influenced by a relatively complex and costly implementation. When looking at the installation of secure servers, the difference between small and large enterprises reaches 25%, a direct consequence of the cost and the maintenance of this type of material, often difficult to support for small businesses. Nevertheless, secure servers remain generally more used (between 45 % and 75 %) than systems of authentication and encryption (between 15 % and 55 %).

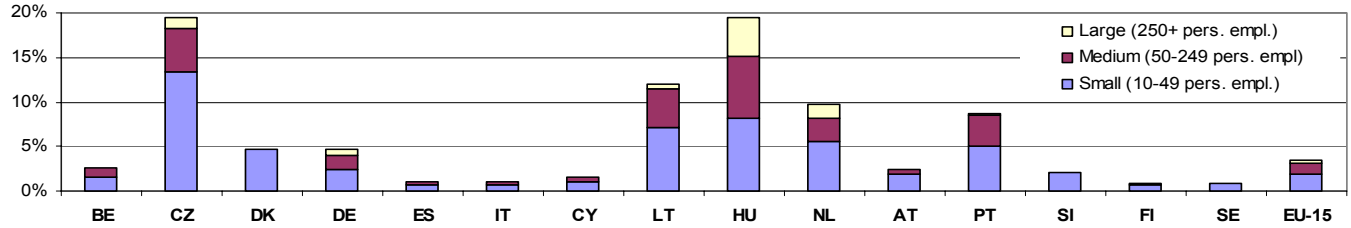
Graph 5: Security devices used in enterprises, by enterprise-size and type of device (in % of all enterprises with Internet access) – EU-15 - 2004



Source: Eurostat, Community survey on ICT usage and E-commerce in Enterprises.

Despite the widening spectrum of technologies with regards to computer and network protection, some enterprises are still not equipped at all. In 2004, small enterprises particularly were among those not to have installed any of the security devices as mentioned in the previous section. This situation can be seen in all countries, but the shares are particularly high in the Czech Republic and in Hungary, where close to 20% of enterprises (regardless of their size) were not equipped. To a lesser degree, Lithuania (12%) the Netherlands (10%) and Portugal (8%) also showed a relatively high proportion of enterprises without any security devices. Surprising is the fact that 4.3% of Hungarian enterprises and 2.6% of Dutch enterprises are of the 'large' category (250 persons employed or more) and 'unsecured'.

Graph 6: Proportion of enterprises with internet access not equipped with security devices (in %), by size of enterprise - 2004



Source: Eurostat, Community survey on ICT usage and E-commerce in Enterprises.

Virus attacks: differences more between countries, less between sectors

Despite the fact that virtually all enterprises have installed virus checking or protection software, new viruses regularly appear and attacks continue to be quite common. When considering all selected activities, between 23% (Slovakia) and 53% (Finland) of all enterprises encountered a virus attack in 2004. Within the individual countries, all sectors of activity are concerned and no clear 'preference' for a certain branch can be detected.

However, there is a noticeable difference between the countries for which data are available: whereas in Germany and Italy, between 20% and 30% of enterprises experienced a virus attack this proportion increased to values between 50% and 60% in Finland, where virus attacks have been far more frequently reported than in neighbouring Sweden. Dutch and Irish enterprises also frequently suffered virus attacks. It should be borne in mind that these indications are based on self-reporting.

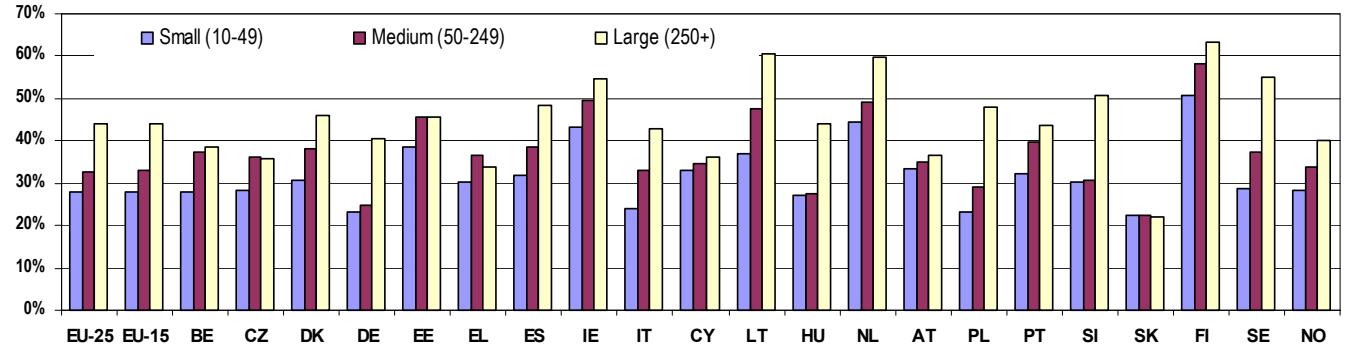
When looking at the enterprise size, it is observed that large enterprises are generally more subject to virus attacks. Significant differences were observed in Germany, Hungary, Slovenia and Sweden, where large enterprises were definitely preferred for virus attacks. In Greece, Cyprus and Austria, the differences are less marked. In Slovakia large enterprises reported slightly fewer virus attacks than smaller ones.

Table 5: Enterprises with Internet access: proportion having encountered a virus attack in 2004, by economic sector (%)

	EU-25	EU-15	BE	CZ	DK	DE	EE	EL	ES	IE	IT	CY	LT	HU	NL	AT	PL	PT	SI	SK	FI	SE	NO
Manufacturing	28.5	28.6	30.9	29.7	32.6	23.0	38.5	30.4	33.4	48.9	25.2	32.9	39.5	28.5	45.7	37.0	26.0	32.6	:	23.0	51.8	30.7	32.6
Construction	24.7	24.2	29.5	30.7	22.4	17.0	35.5	29.7	31.0	32.3	20.3	17.0	42.0	23.1	41.6	28.5	25.0	28.1	31.5	26.7	48.0	19.0	24.9
Wholesale & retail trade	29.4	29.9	29.1	28.9	34.7	22.8	41.6	31.8	33.6	39.9	26.7	35.7	35.8	31.2	47.1	31.9	23.5	34.8	:	23.1	51.2	28.1	25.8
Transport, storage & communication	29.1	29.3	24.3	27.5	32.1	25.0	39.2	34.3	30.6	50.6	25.5	42.9	43.2	28.7	45.7	29.9	22.5	27.1	:	11.9	61.2	29.1	41.5
Real estate, renting & business act.	31.0	31.1	30.1	31.1	36.2	23.7	40.8	32.0	35.7	47.0	26.7	41.0	49.9	28.4	46.5	35.3	30.1	40.5	:	21.8	53.0	41.1	27.3
All selected activities*	29.2	29.4	29.8	29.8	32.4	24.2	39.9	31.4	33.2	45.1	25.3	33.5	40.3	27.8	45.8	33.8	25.6	33.9	31.3	22.5	52.5	30.8	29.3

* see Methodological Notes — Source: Eurostat, Community survey on ICT usage and E-commerce in Enterprises.

Graph 7: Enterprises with Internet access: proportion having encountered a virus attack in 2004, by enterprise size-class (%)



Source: Eurostat, Community survey on ICT usage and E-commerce in Enterprises.

➢ ESSENTIAL INFORMATION – METHODOLOGICAL NOTES

COUNTRY CODES

EU: European Union, including the 25 Member States (EU-25): Belgium (BE), the Czech Republic (CZ), Denmark (DK), Germany (DE), Estonia (EE), Greece (EL), Spain (ES), France (FR), Ireland (IE), Italy (IT), Cyprus (CY), Latvia (LV), Lithuania (LT), Luxembourg (LU), Hungary (HU), Malta (MT), the Netherlands (NL), Austria (AT), Poland (PL), Portugal (PT), Slovenia (SI), Slovakia (SK), Finland (FI), Sweden (SE) and the United Kingdom (UK).
EU-15: European Union, including 15 Member States (BE, DK, DE, EL, ES, FR, IE, IT, LU, NL, AT, PT, FI, SE, UK).
TR: Turkey – IS: Iceland – NO: Norway

SYMBOLS

":" non available or confidential.

DATA SOURCES

Survey on ICT usage in households.
In 2004, 75 016 households and 136 452 individuals were surveyed in Member States.

Sampling unit: households and individuals.
Lower age limit for survey of individuals: 16 years
Upper age limit for survey of individuals: 74 years.
Reference period: first quarter of 2004.
Individual level data relates to the 3 months prior to the survey.
Weighting of results: results have generally been weighted by the number of households and the number of individuals. EU-15 data calculations were also carried out using the same weighting procedure from data available.
*Education leve*l:
– low: (ISCED 1 and 2) primary education and lower secondary education, these two steps normally represent compulsory education;
– medium: (ISCED 3 and 4) upper secondary education and post secondary non-tertiary education, this level generally begins at the end of compulsory education;
– high: (ISCED 5 and 6) tertiary programmes which normally require the successful completion of ISCED 3 or 4 and second stage tertiary education that leads to an advanced research qualification.
Data extracted on: 01 February 2005

Survey on ICT usage in enterprises.
In 2004, 99 069 enterprises were surveyed in participating Member States.

Reference period: first quarter of 2004
Weighting of results: results have generally been weighted by the number of enterprises.
Size coverage: enterprises with 10 persons employed or more.
Size class breakdowns:
small enterprises – 10-49 persons employed,
medium-size enterprises – 50-249 persons employed,
large enterprises – 250 and more persons employed.

Data extracted on: 01 February 2005

SPECIFIC REMARKS

Table 5: Enterprises with Internet access: proportion having encountered a virus attack in 2003, by economic sector (%)
'All selected activities' is composed of the following NACE classes:

NACE D	Manufacturing
NACE F	Construction
NACE G	Wholesale and retail trade
NACE H	Hotels and restaurants (only NACE groups 55.1 (Hotels) and 55.2 (Camping sites and other provision of short stay accommodation))
NACE I	Transport, storage and communication
NACE K	Real estate, renting and business activities
NACE O	Other community social and personal service activities (only NACE groups 92.1 (Motion picture and video activities) and 92.2 (Radio and television activities))

OTHER RECENT RELEASES ON THE INFORMATION SOCIETY:

- Statistics in Focus 18/2005 – Internet usage by individuals and enterprises 2004
- Statistics in Focus 09/2005 – e-Government: Internet based interaction with the European businesses and citizens
- Statistics in Focus 45/2004 – Regional divide in the Information Society

UPCOMING RELEASES:

- Panorama on the Information Society in Europe
- Publications in the series "Statistics in Focus" on *internet activities*, on *e-commerce*, on *e-government*, on *the digital divide* and on *sectoral differences in ICT usage by enterprises*.

Further information:

Databases

EUROSTAT Website/Industry, trade and services/Information society statistics

EUROSTAT Website/Population and social conditions/Information society statistics

EUROSTAT Website/Science and technology/Information society statistics

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European Statistical Data Support:

Eurostat set up with the members of the 'European statistical system' a network of support centres, which will exist in nearly all Member States as well as in some EFTA countries.

Their mission is to provide help and guidance to Internet users of European statistical data.

Contact details for this support network can be found on our Internet site: www.europa.eu.int/comm/eurostat/

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