

The European
e-Business
Market Watch

Sector Report
No. 14 II/May 2003

14_{II}

e-business
w@tch



ICT & e-Business in the Real Estate Sector

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European Commission
Enterprise Directorate General
e-Business, ICT Industries
and Services

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Acknowledgements

This report was prepared by *empirica Gesellschaft für Kommunikations- und Technologieforschung mbH* (Bonn, Germany), on behalf of the European Commission, Enterprise Directorate General. It is part of a deliverable in the context of the "European e-Business Market Watch" (short name: *e-Business W@tch*), which is implemented by *empirica GmbH* in co-operation with *DIW Berlin – German Institute for Economic Research* and *Databank Consulting* on behalf of the European Commission based on a service contract running from January 2002 until June 2003.

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Bonn / Brussels, March 2003

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Introduction

European policy is in a number of areas, including economic, innovation and SME policies, increasingly focussed on promoting the business techniques and new ways of working which will provide the economic and social foundation of the information society in Europe. To help policy makers define their programmes, and to monitor the effectiveness of these policies, some indication of progress and of areas requiring active support is essential. At the same time, many areas of European business are lacking information about the speed of technological update in European markets, which they expect to have a strong impact on their global competitiveness.

Despite the increasing number of studies and market research on electronic business, and especially on electronic commerce, from a number of authors and research organisations in different European countries and world-wide, there used to be a lack of reliable empirical information about the extent, scope, nature of and factors affecting the speed of e-business development in Europe at the sectoral level in an internationally comparative framework. It is the objective of this report to provide such information for the real estate industry.

The e-Business W@tch

This report has been published in the framework of the European e-Business Market Watch. This is a market observatory established by the European Commission, DG Enterprise. Laying the groundwork for a continuous facility, the *e-Business W@tch* monitors and assesses the maturity of electronic business in 15 industry sectors across all EU Member States, including seven manufacturing and eight service sectors. At least two reports are to be published on each sector during the 18-month life-time of the *e-Business W@tch* (cf. publication schedule on the following page).

The research presented in these Sector Impact Studies is intended to help to benchmark progress and to assess how electronic business development can be further enhanced at the European level or at Member State level with the objective to strengthen the competitiveness of European businesses. Special attention is paid to the SME dimension of e-business.

All reports, as well as an extensive collection of statistics on electronic business, can be downloaded from the website of the market observatory at www.ebusiness-watch.org.

Methodological note

Most of the data presented in this report are based on the European e-Business Survey (2002), a cornerstone of the monitoring activities of the *e-Business W@tch*. The fieldwork of this enterprise survey was carried out by INRA Germany GmbH in co-operation with its international partner organisations in June and July 2002 using computer-aided telephone interview (CATI) technology. In total, 9,264 interviews with decision makers in European enterprises were conducted. The survey included all sectors and all Member States, but only in the four largest states (Germany, France, Italy and UK) were all sectors covered. The survey for the real estate sector was carried out in the following seven countries: Denmark, Germany, France, Italy, Portugal, Finland, and the UK. More detailed information about the survey methodology is provided in the Annex to this report.

This report contains survey findings that were not analysed in the previous sector report on real estate in chapters 2.2 – 2.4. Chapters 1, 2.1, 3.2 and 3.3 were updated.

Acknowledgement of contributions

The work of the *e-Business W@tch* is supported by a network of experts who are charged with providing input on specific sectors or e-business topics according to their expertise. With respect to this report and the real estate sector, we gratefully acknowledge contributions from Robert Thompson, director of the RETRI Group, UK.

Sector Impact Studies of the e-Business W@tch: Publication schedule

No.	Sector	Date
1	Food, beverages and tobacco industry	
	• Report I: Economic background / e-business issues	July 2002
	• Report II: The statistical picture (Survey 2002)	Feb. 2003
	• Report III: Recent trends (Survey 2003)	June 2003
2	Chemical industries	
	• Report I: Economic background / e-business issues	July 2002
	• Report II: The statistical picture (Survey 2002)	Feb. 2003
	• Report III: Recent trends (Survey 2003)	June 2003
3	Transport equipment manufacturing	
	• Report I: Economic background / e-business issues	July 2002
	• Report II: The statistical picture (Survey 2002)	Feb. 2003
	• Report III: Recent trends (Survey 2003)	June 2003
4	Financial sector	
	• Report I: Economic background / e-business issues	July 2002
	• Report II: The statistical picture (Survey 2002)	Feb. 2003
5	Insurance and pension funding services	
	• Report I: Economic background / e-business issues	July 2002
	• Report II: The statistical picture (Survey 2002)	Feb. 2003
6	ICT services	
	• Report I: Economic background / e-business issues	July 2002
	• Report II: The statistical picture (Survey 2002)	Feb. 2003
	• Report III: Recent trends (Survey 2003)	June 2003
7	Health and social services	
	• Report I: Economic background / e-business issues	July 2002
	• Report II: The statistical picture (Survey 2002)	Feb. 2003
8	Media and printing	
	• Report I: Background, issues and key figures	Oct. 2002
	• Report II: The statistical picture (Survey 2002)	April 2003
9	Metal products manufacturing	
	• Report I: Background, issues and key figures	Oct. 2002
	• Report II: The statistical picture (Survey 2002)	April 2003
10	Machinery and equipment manufacturing	
	• Report I: Background, issues and key figures	Oct. 2002
	• Report II: The statistical picture (Survey 2002)	April 2003
11	Electrical machinery and electronics	
	• Report I: Background, issues and key figures	Oct. 2002
	• Report II: Recent trends (Survey 2003)	June 2003
12	Retail	
	• Report I: Background, issues and key figures	Oct. 2002
	• Report II: Recent trends (Survey 2003)	June 2003
13	Tourism	
	• Report I: Background, issues and key figures	Oct. 2002
	• Report II: Recent trends (Survey 2003)	June 2003
14	Real estate sector	
	• Report I: Background, issues and key figures	Oct. 2002
	• Report II: The statistical picture (Survey 2002)	April 2003
15	Business services	
	• Report I: Background, issues and key figures	Oct. 2002
	• Report II: The statistical picture (Survey 2002)	April 2003

Real Estate Activities: Sector Profile & e-Business

1 Economic profile

1.1 Definition and focus

The real estate sector comprises five activities: developing, dealing with, letting, broking and managing real estate. According to the NACE Rev. 1 classification, chapter 70, real estate activities are subdivided into three divisions with further subcategories as shown in table 1-1.

Table 1-1: Definition of the real estate sector in NACE Rev. 1

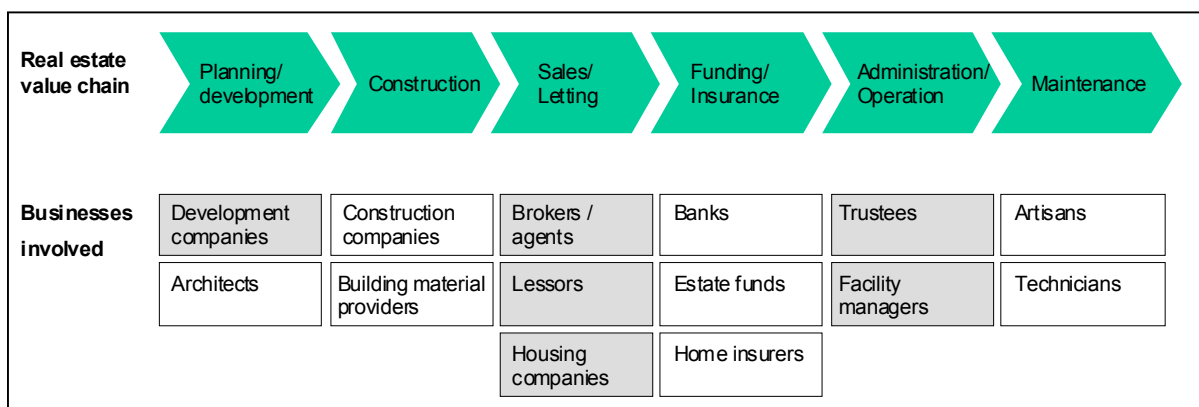
NACE Rev.1		Activity
division	group	
70		Real estate activities
70.1		Real estate activities with own property
	70.11	Development and selling of real estate
	10.12	Buying and selling of own real estate
70.2		Letting of own property
70.3		Real estate activities on a fee or contract basis
	70.31	Real estate agencies
	70.32	Management of real estate on a fee or contract basis

Class 70.11 includes bringing together financial, technical and physical means to realise real estate projects for later sale, whether for residential buildings or other. It excludes development and construction work of a real estate project by a construction unit, which is part of NACE 45.2. Class 70.12 includes buying and selling of self-owned real estate, that is apartment buildings and dwellings, non-residential buildings, and land.

Class 70.2 includes letting and operating of self-owned real estate such as apartment buildings and dwellings, non-residential buildings, including exhibition halls, and land. It excludes the operation of hotels, rooming houses, camps, trailer camps and other non-residential or short-stay lodging places, which are part of NACE 55.

Class 70.31 includes intermediation in buying, selling, renting and appraising real estate, and class 70.32 also includes rent-collecting agencies.

Figure 1-1: Real estate value chain



Source: empirica, Stengel/Reinert (2001). Activities included in NACE 70 (real estate) marked grey

Real estate activities belong to the service sector and are to be distinguished from construction activities. Furthermore, other activities contributing to the construction sector such as architects or construction economists do not belong to real estate either but to business services. Finally, real estate banks and funds belong to the financial services sector. Thus NACE category 70 on which this report is focused comprises only parts of the real estate value chain as shown in figure 1-1.

The importance of the real estate sector

The real estate sector is of particular interest for any study of e-business implications, and for the e-Business W@tch in particular, because it serves important economic and social functions and has a high PC penetration:

- **Economic and social role:** The real estate sector has fundamental significance for both businesses and private individuals. As regards business, real estate is one of the basic preconditions for running a business at all. In respect of tenants and owner-occupiers, because it deals with a basic need, this sector is important in social policy terms.
- **High level of PC usage:** In empirical terms, the real estate sector has the second highest share of employees working with computers. Only financial intermediation has a higher share. According to the European Survey on Working Conditions 2000 by the European Foundation for the Improvement of Living and Working Conditions, 77% of workers in the sector work with computers at least one quarter of the time, and 48% work with computers all the time.¹

1.2 Economic situation and key figures

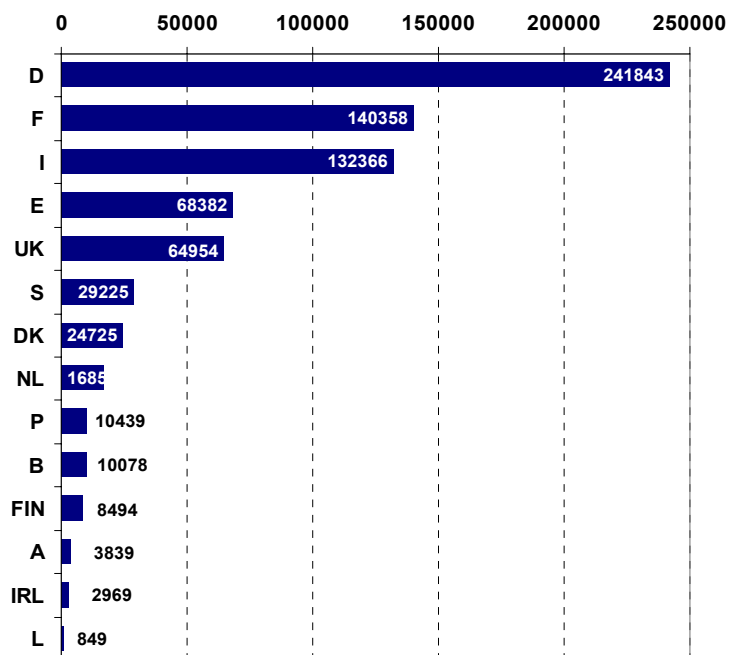
Number of companies

The real estate sector in the EU comprised around 755,000 companies in 1999.² Most of them were located in the large EU countries: Germany (242,000), France (140,000), Italy (132,000), Spain (68,000) and the UK (65,000).

Figure 1-2: Number of real estate enterprises in EU Member States

1999 data; Ireland and Netherlands: 1998.
No data available for Greece.

Source: Eurostat



¹ Paoli/Merllié (2001), p.8

² Excluding Greece for which no data are available.

Missing data and apparent breaks in time series in several countries make it difficult to draw a consistent picture of the development of the number of companies in recent years. As a trend, the number of real estate enterprises has been increasing in almost all countries for which time series data are available. This increase may reflect opportunities for new companies entering the market. One of the largest increases took place in Italy, where the number of real estate companies grew from 99,998 in 1995 to 132,366 in 1999. An exception is the Netherlands, where a decrease from 18,425 companies in 1996 to 16,850 in 1998 occurred.

Employment

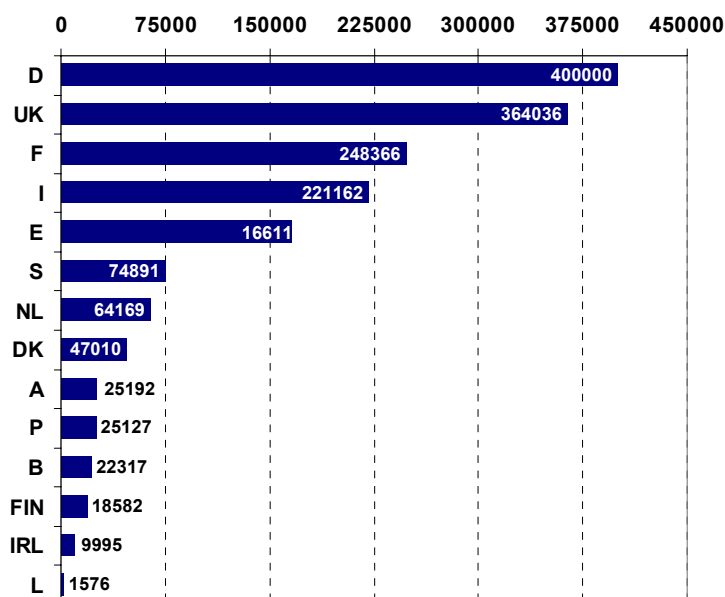
In 2000, around 1.7 million persons worked in the EU real estate sector (no data available for Greece). This figure not only comprises paid employees but includes work forms such as self-employment and freelancing. The number of employees is highest in the large European countries.

Figure 1-3: Number of people employed in real estate enterprises in EU countries (2000)

EI: trend extrapolation with 1995 – 1998 data;
L: trend extrapolation with 1995 – 1999 data;
UK: 1999 data.

No data available for Greece.

Source: Eurostat



In Germany 400,000 persons worked in real estate in 2000, followed by the UK (364,036), France (248,366), Italy (221,162) and Spain (166,115). In the total of 165 million employed persons in the EU, the share of the real estate sector was about 1%. The share of real estate employees is particularly high in Sweden (1.8%), Denmark (1.7%) and the UK (1.3%) and particularly low in Portugal (0.5%) as well as Austria, Belgium and Ireland (0.6% each).

The share of self-employed in total employment is relatively high, with an EU average in the real estate sector of 17.9% in 2000. The share of self-employed decreased slightly from 19% in 1995. The rate is particularly high Italy (56.6%), Spain (25.3%) and Germany (24.7%). Around half of the labour force in the EU real estate sector are women (50.8%). 21.3% of real estate employees work part-time. 23.8% completed a higher education.

In the past ten years, the trend of the number of real estate employees was to increase in most countries. Data for the whole of the nineties is only available for France, Italy, Portugal and the UK, while only in the UK the method of collecting data appears to have remained unchanged – see table 1-3. In the UK, the number of persons employed in real estate increased from 244,000 in 1992 to 364,000 in 1999. Similarly in Italy, the number increased from 163,000 in 1996 to 221,000 in 2000. In France, the number of employees remained stable at slightly more than 300,000 from 1996 to 1999 and then dramatically decreased to around 250,000 in 2000.

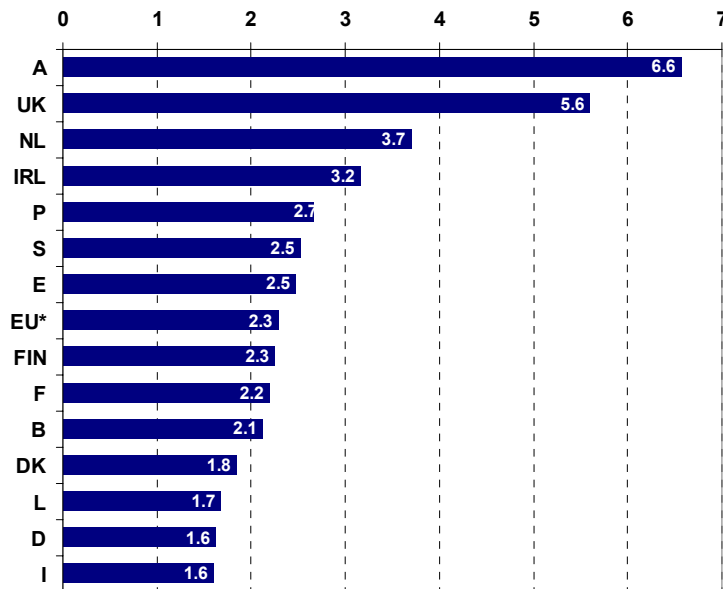
Enterprise structure: very high share of small companies

The EU real estate sector is characterised by a very high share of small companies. Around three-quarters of them are run by a self-employed person with no employees, compared with an average of around 50% in the whole of the service sector. 98% of the companies in the real estate sector have less than 10 employees.

Figure 1-4: People employed per enterprise in real estate in EU countries

2000 data. No data available for Greece.

Source: Eurostat.



The high share of small enterprises is reflected in the low number of people employed per enterprise. The EU average in the real estate sector is 2.3 persons employed per enterprise. The ratio is highest in Austria (6.6), the UK (5.6) and the Netherlands (3.7) and lowest in Germany (1.6), Luxembourg (1.7) and Denmark (1.8).

Data on turnover and employment by company size class further express the importance of small businesses in real estate activities. Small companies (0-49 employees) accounted for 73.9% of the turnover and 82.3% of employment in real estate in the EU, medium companies (50-249) for 20.2% of the turnover and 10.8% of employment and large companies (250+) for 6% of the turnover and 7% of employment in 1997. It can be assumed that these figures have not changed significantly since then.

Value added

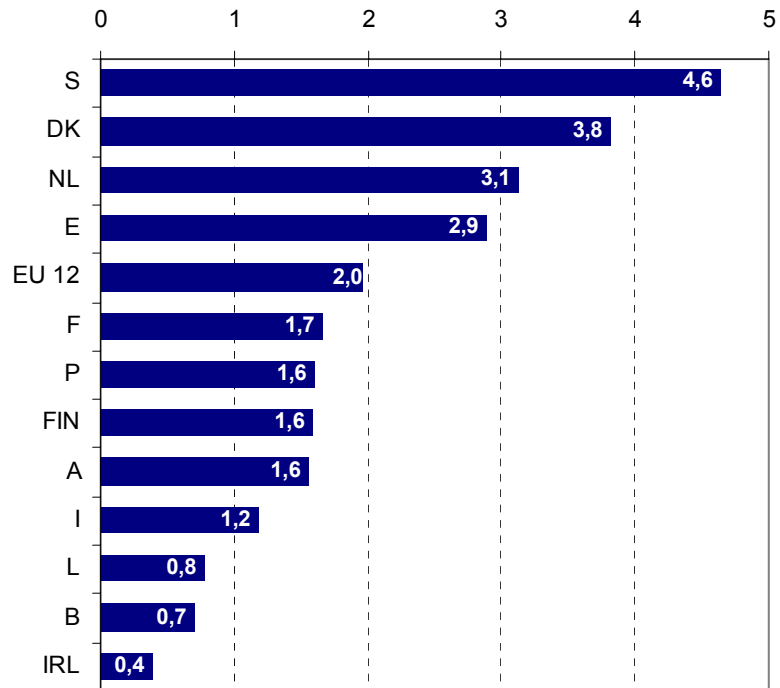
The value added at factor costs of the EU real estate sector – excluding Germany due to methodological reasons as well as Greece and the UK due to missing data – amounted to 55,575 million Euro in 1999. The share of real estate value added in gross value added in the EU was 1.3%.³ This is slightly higher than the share of persons employed. The importance of the real estate sector in terms of value added differs widely among the EU member states. The share of real estate value added in total gross value added is highest in Sweden (4.6) followed by Denmark (3.8) and the Netherlands (3.1). The share is lowest in Ireland (0.4), Belgium (0.7) and Luxembourg (0.8).

³ Excluding Greece and the UK for which no data are available.

Figure 1-5: Value added in EU real estate enterprises in % of national gross value added

Germany missing for methodological reasons. No data available for Greece and the UK.

Source: Eurostat, 1999.



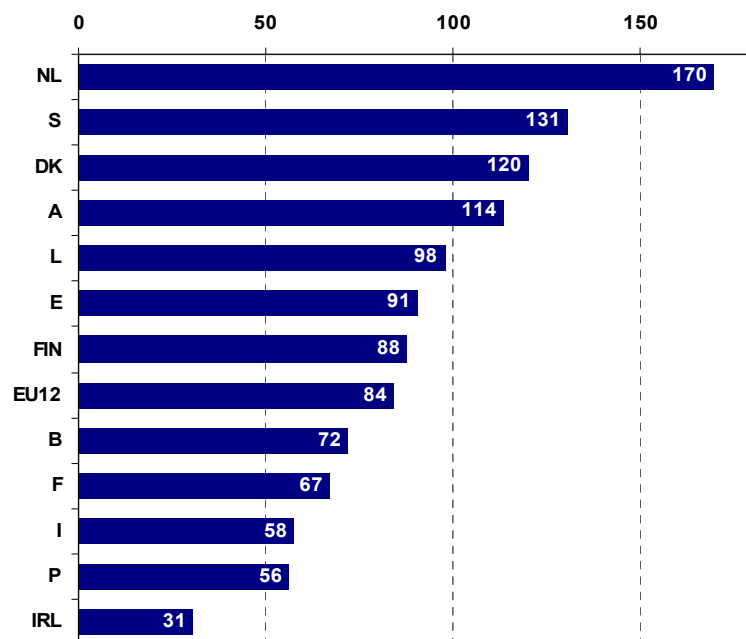
Productivity

The EU average of value added per person employed (i.e. the apparent labour productivity) was 84,092 Euro in 1999 (see figure 1-6). In comparison with other service sectors this is relatively high. Labour productivity was highest in the Netherlands (169,731), Sweden (130,573) and Denmark (119,984) follow. The lowest labour productivity is to be found in Ireland (30,817), Portugal (56,065) and Italy (57,744).

Figure 1-6: Value added per person employed in EU real estate enterprises (in 1000 Euro)

Germany missing for methodological reasons. No data available for Greece and the UK.

Source: Eurostat, 1999.



Market development

The real estate sector in the EU experienced growth in the second half of the 1990s, after a difficult start at the beginning of the decade when slower economic growth or even recession and higher real interest rates were evident.⁴ According to Eurostat data, in most countries the number of housing transactions grew from 1993 onwards (see table 1-2). Germany was an exception: the number of housing transactions fell from 754,000 in 1993 to 550,000 in 2000. One should also note that the housing market in the UK recorded almost twice the number of housing transactions in France or Germany, which could be related to the relatively low level of taxation on real estate in the UK.

Between 1993 and 2000, the price of dwellings in current prices increased in all Member States. In Austria, Finland, Sweden and the UK, prices remained below their level of 1990 until at least 1995 before increasing. The highest rates of increase were recorded in Ireland and the Netherlands, where dwelling prices more than doubled between 1990 and 2000. These figures refer to national averages. Significant variations can be recorded for different regions, cities or even local suburbs.

Table 1-2: Number of housing transactions in EU Member States 1991 – 2000 (in thousands)

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
Belgium	99.7	104.9	104.1	104.1	96.3	102.4	105.6	107.7	114.6	108.2
Denmark	52.4	60.1	63.2	71.4	74.1	76.9	78.1	76.6	81.3	n.a.
Finland	62.1	68.0	75.2	71.1	68.2	83.3	81.4	88.0	90.0	n.a.
France	712.5	611.1	623.7	684.3	639.1	773.1	n.a.	739.0	n.a.	n.a.
Germany	543.0	512.5	754.3	662.2	619.5	600.0	570.0	595.0	580.0	550.0
Greece	43.9	59.9	61.4	66.0	67.2	68.7	100.2	n.a.	n.a.	n.a.
Ireland	37.1	44.4	45.4	50.2	49.3	61.0	64.7	68.9	78.6	80.9
Italy	555.9	465.4	501.9	495.2	502.5	483.8	523.6	576.3	639.6	n.a.
Luxembourg	3.1	3.7	3.0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Netherlands	211.1	245.3	198.0	215.0	224.0	259.0	281.0	280.0	292.0	268.0
Portugal	150.2	166.0	178.1	186.9	186.0	n.a.	n.a.	n.a.	n.a.	n.a.
Sweden	57.2	33.3	35.7	42.7	41.9	46.6	54.7	52.2	61.1	54.4
UK	1305.0	1138.0	1195.0	1275.0	1134.0	1241.0	1440.0	1348.0	1469.0	1431.0

Note: n.a. = not available. No data at all available for Austria and Spain. France: Break in series as of 1992. Netherlands: Break in series as of 1993.

Source: Eurostat, European Business Facts and Figures (2002)

Current issues in EU real estate business

Clearly the importance and impact of issues will differ from market to market. However there is a list of macro-issues which affect the real estate sector throughout the EU:

- **Sustainability:** The real estate industry has a growing understanding that it has a role to play in the wider debate about sustainable development both by providing more sustainable buildings for people to live and work in, and by ensuring that the industry itself works in a sustainable way. This has implications for the development of new property and the operational management of the existing stock.
- **Connectivity:** The realisation that the provision of high bandwidth telecommunications to buildings is a key facilitator for business is growing amongst all the stakeholders in the industry. Again this has implications both for new development and existing stock.
- **Securitisation:** Real Estate remains an industry in which the core products are large, inelastic and illiquid. Despite some limited national examples, there is no Europe-wide equivalent of the US Real Estate Investment Trust. Such a vehicle is said to bring greater liquidity to the market and make the sector more easily tradeable. There are REIT-like vehicles in Belgium and to an extent Germany. The initiatives to create tax-transparent vehicles for property ownership are national rather than at EU level. Meanwhile, investing in securitised property requires the purchase of property company shares.

⁴ The information for this sub-chapter is taken from Eurostat (2002), p. 293.

- **Valuation:** Comparability of valuations between national markets remains a live issue, particularly in the context of changes to reporting standards due over the next few years that will fundamentally change the way the value of property is treated in corporate accounts.
- **Regeneration:** The big issues of urban and rural regeneration are important to the real estate industry. The ability to provide commercially viable alternatives to obsolete building infrastructure is a significant factor in the generation of economic output.
- **Social responsibility:** Increasingly, investment in property is coming under the same governance pressures as other asset classes with respect to social responsibility.
- **Affordability:** The provision of affordable residential accommodation, particularly in urban environments, is an important factor in economic health. Without it, the lower paid strata of the workforce can be priced out of the labour market.

Real estate market characteristics in the sample countries

The sample for the 2002 survey of the *e-Business W@tch* in the real estate sector included seven countries: Denmark, Finland, France, Germany, Italy, Portugal and the UK. A brief overview of basic characteristics of the real estate sector in the countries of the survey is meant to facilitate the assessment of the findings.

Denmark has one of the lowest residential property rates in the EU. Only 43% of the 2,430,000 dwellings in the country are occupied by their owners. The real estate market is dominated by a number of large chains, owned or run in connection with banks or mortgage banks. There is also a market for real estate agents, some of whom operate under the brand of marketing chains. In total, 12,000 property agents (employed and self-employed) are working in the sector. The large chains established highly computerised marketing systems with their own Internet platform including pictures, floor plans and financial key figures for each of the properties for sale. As regards recent market developments, a considerable appreciation in prices could be observed during 2001. Rent prices have increased by 2.7% and residential sales prices increased by 7.1%, compared with 2000. For 2002 no considerable price increase is forecasted.

France: With an overall population of 60 million inhabitants and some 28,000,000 dwellings – of which nearly half (45%) are rented – France represents one of the largest real estate markets within the EU. Overall, 17,000 property agents and some 8,000 real estate managers are active in the field. During 2001 prices have generally increased compared with 2000. With respect to rent level, an increase of 3.5% took place while sales prices increased even higher, by 6.5%. For 2002, prices are estimated to remain stable. The French National Real Estate Federation (FNAIM) maintains a computer database which include the properties advertised by 8,000 affiliated agencies. Whether they are aimed at the housing or the tertiary sector and for sale or rental, these properties are available for consultation on the Internet (www.fnaim.fr). The database is sectioned at local level and can be accessed through a software programme that was developed by FNAIM itself.

Germany: Comprising 36 million dwellings, the German real estate sector is the largest in the EU. At the same time, Germany has the lowest residential property rate among the EU Member States – only 40% of all dwellings are occupied by the owner. As regards invested capital Germany represents one of the most significant national markets in the EU. About 27% of the entire capital invested in properties throughout the EU is invested here. For instance, in 2000, about 17.3 billion Euro were invested by institutions such as insurers, pension funds and real estate funds. Office properties have attracted most capital. However, the overall market is currently suffering from a sluggish economy (0.6% GDP growth in 2001) and high unemployment rates (2001: 9.4%). According to a recent market study, market volumes – measured in terms of overall space rented – for commercial properties decreased by about 12% in 2001. At the same time, investments in the residential building sector decreased by about 20%. East Germany – i.e. the new German Länder – suffers from structural problems in particular. Here, about one million flats are empty and half of them are not even habitable. Prices have remained quite stable during 2001. Compared with 2000, rent prices increased by 1%

while prices for residential sales dropped by 2%. With regard to 2002, no considerable price changes are forecasted.

Italy – alongside other EU Member States – continues to experience the effects of an economic slowdown. As regards the real estate market, this situation has resulted in a noticeable reduction of office occupier demand. Nevertheless, recent market forecasts show continuing interest and confidence in the investment and development sectors of the Italian property market. Investors are expected to respond to the rental growth experienced across the different sub-markets throughout 2001. Overall, the Italian real estate sector is characterised by a relatively high residential property rate. Currently, 26,400,000 dwellings exist of which three-quarters are occupied by the owner. The European Council of Real Estate Professionals (CEPI) has estimated that currently 20,000 real estate agents are active in the field. Both rents and sales prices increased between 4 – 8% during 2001, and a further increase of 5-10% has been forecast for 2002.

Finland: Since the economic crises in the beginning of the 1990s, the development in the Scandinavian property markets has been positive with increasing rents, decreasing vacancy levels and decreasing yields. According to a recent forecast by PriceWaterhouseCoopers the market is estimated to continue in this positive direction owing to a positive economic climate and a strong growth, especially in the main cities. With respect to the Finnish market in particular, Helsinki – with 20% of the Finnish population – represents the largest sub-market. Across the country, 2,400,000 dwellings currently exist of which almost two thirds (63%) are occupied by the owners. In total, 3,000 property agents and another 4,000 property managers are active in the field. Prices remained stable during 2001, and no considerable price increase is expected for 2002. However, recently introduced legislation concerning the question which party ultimately has to pay the broker's commission leaves some uncertainties about the rental market in particular.

Portugal: The Portuguese economy has continued to record strong economic growth in recent years, which appears to have had a positive impact on the real estate sector. The construction sector has been very dynamic in the field of housing, producing slightly more than 100,000 dwellings per year (2001), which means more or less 10 dwellings per 1000 inhabitants – twice the European average. As a result more than 235,000 contracts per year were signed between credit institutions and private individuals to acquire dwellings in the system of self-ownership. Moreover, the office and retail markets continue to perform an upward trend – despite the economy slowing down meanwhile. In particular, the expansion of the supply sector has fuelled demand for strategic distribution space and a number of high quality developments. Increased letting activities in the office sector resulted in an annual take-up of 145,000 square metres (2001), continuing the upward trend since the late 1990s. However, it is estimated that this could be lower in 2002 due to limited supply. As the Portuguese real estate market is rather tight, investors are currently aiming at forward acquisitions. Since there are only few major developers in the country this is rather difficult.

United Kingdom: The UK economy has been the most resilient one in Europe with official figures suggesting that economic output grew by 2.4% in 2001, close to its long-term rate. Against this background, there has been considerable interest from foreign investors in acquiring residential and commercial property within the UK in recent years. Although this may have been temporarily affected by international events, particularly in the central London market, the relative ease with which foreigners may acquire interest in property and the continuing return on investment and capital growth is likely to drive this market. Since early 2001, however, the major London office markets have seen rising vacancy rates, and other regional markets (e.g., the Thames Valley region), have been affected by the downturn of the technology sector, which is considered as the major space occupier in this area. With respect to the residential market, the ongoing lack of property on the market is now a major influence of price inflation. House price inflation is being driven by the continued shortage of homes for sale. Although the average number of homes for sale per surveyor rose slightly to 65 in August 2002, this is six below the same period of last year and way below the long-term average of 119. All signs indicate that this shortage is likely to continue for some time. The residential lettings market in England and Wales continues to be dominated by buy-to-let investors buying into the market.

2 Usage of ICT & e-business

2.1 The role of ICT and e-business in real estate

Internet increases transparency of the real estate market

The real estate market is characterised by a particular lack of transparency. Information about the supply of properties is often poorly structured and would-be purchasers and tenants have difficulty finding the information they need about properties in which they are interested. One reason for this situation is that the goods offered – houses, flats and offices – are largely non-standardised and have yet to meet individual needs and requirements to be sold or let. Thus, the real estate market could benefit strongly from a more widespread use of ICT. In particular, the Internet can facilitate the identification of suitable properties by providing detailed information on :

- **basic object characteristics** such as location, price, furnishings and facilities;
- **visualisation** of properties through ground lines, sketches, pictures or even virtual walks through buildings;
- **environmental** information such as distance to kindergartens, schools, restaurants, sports facilities and cultural centres;

Furthermore, the Internet can provide additional information to facilitate the decision to buy or rent real estate goods or to conclude a contract:

- **market information** such as price comparisons of real estate properties in the region;
- **financial services** links to funding opportunities and home insurance;
- **removal** information such as links to removal service providers;
- **legal assistance** such as contract templates and information about court judgements;
- **checklists** of “to dos” in the course of buying or renting real estate and removals.

Such in-depth information allows an advance decision if a personal visit is worth while, and it may prove to be a valuable means of customer retention. The customer can look for suitable objects whenever he wants and he can remain anonymous until he decides to contact the supplier. Real estate companies can find potential customers who are better informed and thus require less time for consulting and who are more likely to actually conclude a contract. The real estate agents can spend more time on “valuable” customers.

Offering real estate goods in the Internet has become quite prevalent. Standardised software for constructing real estate Internet platforms is already available. Visualising software is still quite expensive, so that virtual visualisation on the Internet is likely to be used only for large objects such as business buildings. In practice, simply putting newspaper advertisements on a website has not proved successful, as shown by the unsuccessful attempt of the portals www.d-immmo.de and www.immoseek.de.

Real estate websites can be beneficial to offline business

Providing information on the Internet does not mean that the whole business process must be conducted online. The Internet can serve as an additional means of communication, being beneficial to offline real estate business in numerous ways:

- acquiring new customers who are prone to use the Internet;
- reducing costs in the form of money, time and effort because customers can collect basic information themselves without contacting agents;
- increasing average expenses by customers;
- decreasing the time between initial personal contact and contract conclusion,

- drawing conclusions to market trends by analysing click rates of offers, information websites and links,
- contributing to brand name creation.

An example of a website with real estate information is the Finnish KTI Property Information Ltd. (www.kti.fi). However, if Internet presentations are meant to serve the functions mentioned above they need to be professional – that is frequently updated, designed in a user-friendly manner, and free of errors. Apparently this does not go without saying. For example, a study by the German Tenants Association (Deutscher Mieterbund) analysing 13 online property databanks found that offers often are not up to date and that the level of information provided about objects differs between the portals.

E-business in real estate planning and development

Real estate development can also benefit from e-business applications. Platforms with calls for tenders can define standardised forms and processes for a construction endeavour. Collaboration tools for project management may enable all partners involved, e.g., housing companies, architects, artisans and construction companies, to communicate through the Internet. The partners may share a common databank with information on the project such as plans and current state of realisation. Platforms such as build-online.com that offer software for the European construction and real estate industry can facilitate such processes.

There are also strong links with public sector websites dedicated to planning. As an example, in the UK, Westminster Borough Council, a local authority in Central London, provides all its structure plans and zoning information on-line to facilitate access to information for developers. However, this kind of transparency enabled through website information may of course also be used by "anti-developers".

Brokerage supply and demand on the Internet

Some real estate firms use the Internet not only for information provision, but for comprehensive brokerage and service.⁵ Web-based brokers are trying to attract real estate companies by promising to supply them with contacts to individuals looking for housing. There are already numerous examples, many of them in the USA, such as homestore.com, homes.com, homeadvisor.com, and realtor.com. Examples in the EU are planethome.com, propertygate.com, ledigalokaler.com and immopool.de. These websites offer property in several EU states or even outside Europe. However, the share of objects sold through the Internet is still very small; in Germany it is estimated to be less than 5%.

Initially, agencies were quite reserved about the Internet because they feared for their most important capital: object lists, contact addresses and profiles of potential customers. However, agencies are not becoming superfluous at all because the Internet is usually not used to sell, but to initiate. After pre-selecting objects on the Internet, potential customers still require further consulting and viewing the object at site.

The potential of Internet offerings is not uniform throughout the sector. It can be expected that the Internet will be more important for the mass-market of relatively small buildings transacted for individual housing than for the large buildings purchased by businesses. This is because of the relatively high value and complexity of business transactions, requiring comprehensive negotiations. However, there are already examples of brokers for business real estate such as loopnet.com and bouygues-immobilier.com (see box text).

⁵ Johnson/Redman (2001) suggest four stages of a comprehensive real estate transaction: property search (stage 1), signing of a contract or agreement (stage 2), due diligence opportunities engaged by parties to the contract (stage 3), closing of the contract and finance package (stage 4).

Comprehensive property search at Bouygues-Immobilier.fr

Bouygues are a large French conglomerate with interests in Telecommunications, Utilities and Real Estate. Bouygues-Immobilier.fr is the website of the commercial and residential property arm and demonstrates the power of the internet when searching for property.

The user is able to specify and store location, budget and preferences and search the database of developments, alternatively a search using a dynamic map is available, allowing a drill down from country to development. The target development has full information on sizes, types and availability including pictures and floor plans. The user is also able to investigate the local area in more detail through maps, panoramas and links.

The site acts as a primary contact point between purchaser and developer with the ability to contact an advisor directly, register for email updates, request a brochure, arrange finance or email the site reference. Additionally the site includes an area for existing Bouygues customers, existing purchasers of property, who can use the site to communicate with project managers and for post-sales customer care.

The advantages of the site for Bouygues are that it delivers complex, multi-layered information to a wide audience in a cost-effective manner. This information can be kept up to date at marginal cost. It captures potential clients for their property product and reinforces their relationship with existing clients whilst reducing the cost of servicing them.

Source: Robert Thompson, RETRI Group

Marketing expenses for establishing a web-based real estate brokerage are said to be high. Thus probably only a small number of providers will survive with their business model. Only the largest providers are likely to establish a brand name that customers will remember. In this respect, those providers who are already well known in traditional real estate brokerage have an advantage over newcomers. Some sector insiders mention critical masses of objects up to six-digit figures in order to be able to maintain web-based real estate platforms.

E-business can support facility management

Facility management, that is the management of real estate and related services including commercial, technical and infrastructure-related issues, can be supported online. E-business applications internal to the housing company can support tasks such as client data administration and bookkeeping. Service applications can support maintenance, cleaning and remote control of facilities. Such services can be integrated into an Internet-based customer care centre beneficial for both the administrators and the tenants. Some examples:

- **Cost monitoring and billing** can be supported by IT applications that have online access to metering e.g. of water or fuel consumption in apartments. This data is fed into monthly bills and is already used for online feedback to tenants about costs incurred.
- **Service provision:** After-sales service in real estate is increasingly delivered via ICT, particularly e-mail correspondence with tenants and owners and call centres. These technologies are providing new means for Customer Relationship Management. New services based on smart home technology are also emerging to meet increased demand for security, comfort and energy conservation.
- **Maintenance** can become easier with ICT use. Through an Internet portal of his or her facility management company, a tenant may be able to describe a certain malfunction, e.g., a broken tap, in detail. The description is transferred to the housing company which then contacts an artisan. At the same time it may be discovered, through automatic warehouse check, that a certain device is currently unavailable. Even more simply, the tenant may be enabled to have broken facilities repaired on his or her own by and inform the housing company ticking pre-defined boxes online. The housing company only monitors the transaction and becomes active only when necessary, e.g. when invoices have to be paid.

- **IT caretakers** for business offices are a special service offered by some real estate companies within their overall offer of building related services offered to business customers. Unlike the traditional caretaker, the modern IT concierge is in charge of all issues relating to the information and telecommunication infrastructure of a building, going into action whenever the network strikes or work places need to be moved around the building.

E-business in general and service providing in particular do not only take place via the Internet, but also through special intranet and extranet solutions in real estate business:

- **Intranets** are currently being used in the sector to facilitate fault reporting, run facility management services and help outsiders and insiders find the right contact within the company. In general, the larger the organisation the more it can benefit from intranet solutions.
- **Extranets** or standards-based virtual private networks (VPN) are already enabling housing providers to link much more closely with their suppliers, particularly maintenance contractors, reducing costs and increasing the speed of response to tenants and owner needs.

There is also a lot of growth in the provision of community portals, based upon a specific building or development that not only provide facilities' management information about the estate, but also information and services for the workforce within that building. For example vicinitee.com provides this service to around twenty buildings in central London. The system is fully integrated into each building, with a substantial administrative layer producing, for example, access documentation. See Enjoy-work.com in the box text as a further excellent example.

Office campus information and service provision: enjoy-work.com

Enjoy work is the website for Chiswick Park, a 140,000 square metre office campus in West London. The philosophy of the development was to provide the occupier with the best working environment both internally and externally. The scheme addresses the desire of companies to attract and retain key employees. The logic is simple – enjoy-work. If people enjoy work, they do better work: if they do better work, you have a better business.

Each of the buildings has high bandwidth available delivering the intranet – enjoychiswickpark.com – which is run by the on-site management team. The intranet provides access to preferred suppliers delivering such items as groceries, flowers, dry cleaning etc – all designed to make the working life easier. In addition the site builds on the sense of community with details about other tenants, local events, local travel and so on.

The site also has more conventional content and has been available throughout the development cycle, building from available land, through the construction phase and onto the current thriving community of occupiers. This has had real practical impacts. It enabled Chiswick Park to market directly to potential tenants, rather than through property advisers and facilitated successful pre-letting of space at 15% above local market levels.

Source: Robert Thompson, RETRI Group

Ambient intelligence in the home of the future

In the future, all home facilities – from the TV set to the central heating – may be linked to a computer network, allowing instant adjustment to the tenants' or proprietors' needs as well as remote services. An automatic presence registration module can steer heating and light as soon as someone enters the home. Home service providers such as security services can use this module when the proprietors are on vacation. Lights, door locking and ovens may be activated remotely from the car. A project named "Futurelife" (www.futurelife.ch), including more than 60 companies from the retail, computer and home devices industry is currently examining the opportunities and impediments of such ambient intelligence at home.

Real estate does not really play a forerunner role

Although internal employee use of PCs is perhaps surprisingly widespread in the real estate sector, the sector is not to be seen as a forerunner in ICT use and e-business applications which involve electronic interactions with clients and suppliers. A recent survey comparing website offers concluded that the websites of real estate brokers and of housing providers were unsatisfactory or poor. Less surprisingly and in common with many other sectors, most real estate B2B e-commerce platforms have not yet reached profitability; this market is still in an experimental phase.

In general, the real estate sector is taking up innovations rather late compared to other sectors, because products are quite heterogeneous, transaction volumes are high, and innovation cycles are long. Beside these macro-level impediments, real estate businesses report about impediments at the firm level. As found out in a KPMG study in 2000 covering questionnaires from 194 German real estate firms, numerous factors impede the application of e-business in real estate firms:

- lack of personal capacities within the companies (53% of respondents noted this barrier);
- Internet access among buyers and tenants is not sufficiently widespread (51%);
- security issues of the Internet (45%);
- clerical staff lacks PC know-how (42%);
- lack of compatibility of downstream systems (39%).

Further impediments were capacity bottlenecks of existing systems (36%), implementation costs (30%), and know-how deficits on the management level (29%).

Barriers and opportunities for SMEs

Regarding online information, broking and service, one reason for the low level of adoption of ICT in external e-business could be the market structure. Small and very small companies find it difficult to release enough resources to build ICT and e-business solutions themselves. This problem will soon be addressed by standardisation of e-business solutions in a way suitable at least for SMEs. The world's largest supplier of enterprise resource planning (ERP) software, SAP, whose products are to date only affordable by large enterprises, has now started to target smaller companies across all sectors and, also recently, has initiated co-operation with Deutsche Pfandanstalt, a key supplier of IT services to housing providers in Europe.

Small and medium-sized agencies can benefit from e-business through joining agency platforms. An example is immonet.de provided by the Ring Deutscher Makler, a German real estate agency association. Furthermore, e-business enables SMEs to optimise sales controlling and reduce costs. Information on customers can be stored and analysed and support the selection of preferred customers and service levels.

Indirect impacts of e-business on the real estate sector

E-business plays a role not only directly in terms of e-business application within the sector itself, as discussed in this report, but also indirectly in terms of quantitative and qualitative space requirements:

- E-commerce may reduce the need for retail space as more and more customers buy online and do not necessarily wish to go to a brick-and-mortar store. As a consequence, rental rates may decrease.
- E-commerce may lead to a relocation of business space as location may become an aspect of minor importance for online shops. Location may be more bound to logistic aspects of goods delivery, requiring locations with good traffic connection, as opposed to locations in proximity to customers.

As a study of the impacts of e-commerce on the UK retail property, conducted by the College of Estate Management, concluded preliminarily, "retail space is still required, but may change in its intensity and type of use ('shops as display areas') as online sales grow". In a survey of investors, developers and surveyors, 89% of respondents expected that "rental values and capital values could all be depressed

by e-commerce". The authors of the same study assumed that "online B2B is growing rapidly and is likely to also have an impact on inter-firm relations and space requirements".

2.2 ICT infrastructure and skills development in real estate

2.2.1 ICT infrastructure

Internet connection technology

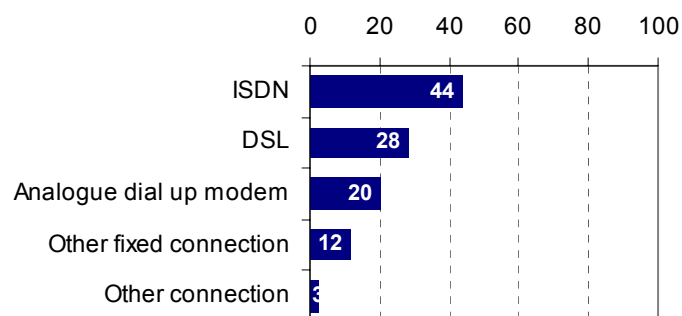
Altogether: Most EU real estate enterprises use an ISDN connection to access the Internet (see figure 2-1). 28% have a DSL connection, 20% an analogue dial-up modem, 11.7% another fixed connection (most of them likely to be leased lines) and 2.5% use another kind of connection (e.g., wireless connections).

Figure 2-1: Internet connections in EU real estate enterprises (in %)

Base: EU-7 (DK, D, F, I, P, FIN, UK), real estate enterprises with Internet access (n = 622).

Figures weighted by employment ("enterprises representing ...% of employees"). Reporting period: June/July 2002

Source: e-Business W@tch (2003)



Sector comparison: In comparison with the other sectors of the survey, the real estate sector has an average level of analogue dial-up modem use and an ISDN and DSL use slightly above average. The share of enterprises with "other fixed connections" is the lowest of all sectors. This may be due to the large share of small companies in the real estate sector, given that "other fixed connections" are mainly leased lines which are to be found mostly in large companies.

Countries: The sample countries are marked by different Internet connection standards. Denmark has the largest DSL penetration (62%) and the lowest level of "other fixed connections". Germany has the lowest share of users of analogue dial-up modems (4%) and the highest share of ISDN users (65%). French real estate enterprises have the second highest level of DSL users (36%). Italian real estate firms are average in all categories. Portugal has the lowest level of DSL users (9%) and is above average in analogue dial-up modems. Finland performs the highest level of "other fixed connections" (33%). UK real estate firms have the highest percentage of analogue dial-up modems (37%) and the second-highest level of "other fixed connections" (20%).

Company size classes: Large companies have a clear preference for "other fixed connections" (67%) that is to say mainly leased lines, while the level of ISDN is lowest of the three size classes. Medium-sized enterprises have the highest level of DSL (40%) and the lowest of analogue dial-up modems (13%). Small companies are predominantly equipped with ISDN (48%).

Table 2-1: Internet connections in EU real estate enterprises by country (in%)

	Analogue dial-up modem	ISDN	DSL	Other fixed connection	Other connection
EU7	20	44	28	12	3
DK	20	29	62	7	0
D	4	65	29	8	1
F	25	34	36	11	5
I	19	45	28	8	0
P	28	51	9	15	6
FIN	28	30	23	33	5
UK	37	25	16	20	1

Multiple answers possible. Base: EU-7 (DK, D, F, I, P, FIN, UK), real estate enterprises with Internet access (n = 622). Figures weighted by employment ("enterprises representing ...% of employees"). Reporting period: June/July 2002.

Source: e-Business W@tch (2003)

Table 2-2: Internet connections in EU real estate enterprises by company size (in%)

	Analogue dial-up modem	ISDN	DSL	Other fixed connection	Other connection
EU7	20	48	26	5	2
0 – 49	20	48	26	5	2
50 – 249	13	42	40	16	7
250+	16	17	34	67	1

Multiple answers possible. Base: EU-7 (DK, D, F, I, P, FIN, UK), real estate enterprises with Internet access (n = 622). In % of enterprises. Reporting period: June/July 2002

Source: e-Business W@tch (European e-Business Survey 2002)

Bandwidth of Internet access technology

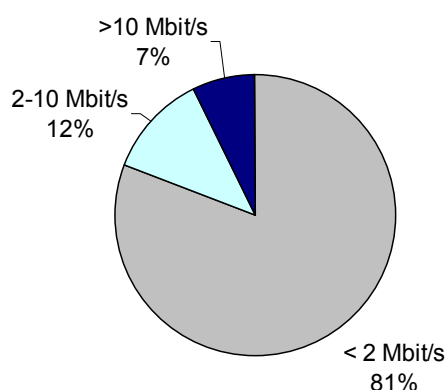
Altogether: The vast majority – real estate enterprises representing 81% of the employees – has a bandwidth of less than 2 MBit/s. A bandwidth of 2-10 MBit/s (12%) and more than 10 MBit/s is much less common.

Figure 2-2: Bandwidth of Internet connections in EU real estate enterprises (in %)

Base: EU-7 (DK, D, F, I, P, FIN, UK), real estate enterprises with Internet access (n = 622)

Figures weighted by employment (enterprises representing ...% of employees). Reporting period: June/July 2002

Source: e-Business W@tch (2003)



Countries: Denmark performs the highest level of firms between 2 and 10 MBit/s bandwidth (30%) and together with Germany the lowest share of bandwidth larger than 10Mbit/s (4%). French real estate firms are best equipped with access technology of more than 10Bit/s (10%). Portugal has, together with Italy, one of the highest shares of firms with a bandwidth larger than 10 Mbit/s (9%) but also the highest share of firms with Internet access less than 2 MBit/s (84%). Finland has the second highest share of enterprises with a bandwidth of 2 – 10 MBit/s (26%). The UK is around average in all classes.

Table 2-3: Internet access bandwidth in EU real estate enterprises by country (in %)

	< 2 MBit/s	2 – 10 MBit/s	> 10 MBit/s
EU7	81	12	7
DK	66	30	4
D	83	13	4
F	82	8	10
I	77	14	9
P	84	7	9
FIN	67	26	7
UK	78	14	8

Base: EU-7 (DK, D, F, I, P, FIN, UK), real estate enterprises with Internet access (n = 622). Figures weighted by employment (enterprises representing ...% of employees). Reporting period: June/July 2002.

Source: e-Business W@tch (European e-Business Survey 2002)

Company size classes: A high bandwidth is a clear domain of large companies: 28% of them have a bandwidth larger than 10 MBit/s, while only 11% of the medium-sized and 5% of the small firms have this bandwidth (see table 2-4).

Table 2-4: Internet access bandwidth in EU real estate enterprises by company size (in %)

	< 2 MBit/s	2 – 10 MBit/s	> 10 MBit/s
EU7	85	10	5
0-49	86	10	5
50-249	75	15	11
250+	45	27	28

Base: EU-7 (DK, D, F, I, P, FIN, UK), real estate enterprises with Internet access (n = 622). Figures in % of enterprises. Reporting period: June/July 2002

Source: e-Business W@tch (European e-Business Survey 2002)

Remote access to the company's computer system

Altogether: Enterprises representing 23% of real estate employees allow remote access to their computer system: 15.4% from a fixed network and 7.7% wireless. Further 8.2% of real estate enterprises plan to introduce remote access within twelve months.

Sector comparison: In comparison with the other sectors of the survey, the real estate sector has the second lowest share of enterprises with remote access to the company's computer system. Only the health and social services sector performs a slightly lower share (19.6%). Since real estate business often implies field services such as showing objects to customers, the low level of remote access indicates that e-business opportunities are not realised. In practice the most advanced real estate agents have their car equipped with computers enabling a client to watch objects while sitting in the car and going to a site, saving time for information when actually being on-site.

Countries: Denmark has the highest level of remote access (44%) and also the largest share of plans to introduce it (17%) (see table 2-3). The next places in the remote access ranking are taken by Finland (41%), the UK (34%), Germany (30%) and Portugal (27%). The remote access level is rather low in France (13%) and Italy (7%). Italy has also the lowest share of real estate firms planning to introduce remote access (6%).

Company size classes: Large companies have a much higher share of remote access opportunity (66%) than medium-sized firms (36%) and small firms (17%) (see table 2-5). Remote wireless access is also much higher among large firms (25%) than in SMES (both 6%). However, the plans to introduce remote access are highest in medium-sized firms (15%), and small firms have a higher level of plans (8%) than large firms (3%) which indicates an intention among SMEs to catch up in remote business applications.

Figure 2-3: Remote access to company's computer system in EU real estate enterprises by country (in %)

Base: EU-7 (DK, D, F, I, P, FIN, UK), real estate enterprises using computers (n = 658)

Figures weighted by employment (enterprises representing ...% of employees). Reporting period: June/July 2002

Source: e-Business W@tch (2003)

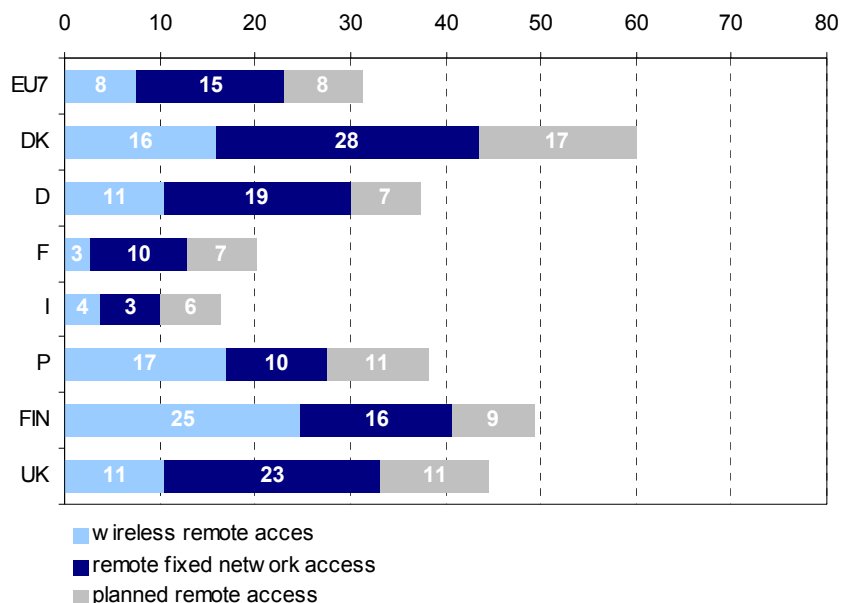


Table 2-5: Remote access to company's computer system in EU real estate enterprises by company size (in %)

	Remote access	Remote wireless access	Planned remote access
EU7	17	6	8
0-49	17	6	8
50-249	36	6	15
250+	66	25	3

Remote wireless access included in remote access. Base: EU-7 (DK, D, F, I, P, FIN, UK), real estate enterprises using computers (n = 658). Figures in % of enterprises. Reporting period: June/July 2002

Source: e-Business W@tch (European e-Business Survey 2002)

2.2.2 IT skills development and recruiting

Training and skills development

Altogether: Interviewees were asked if their company supports employees in acquiring computer or IT networking skills and what support measures the company allows. 81% agreed to the general statement that their company offers support measures (see figure 2-4). 68% said the company allows employees to use some of their working time for learning activities, 50% to participate in computer or IT-related training offered by third parties, and 45% to offer in-house computer or IT training.

Countries: The differences between countries are distinct (see table 2-6). Denmark has the highest levels of general training support (92%), training by third parties (72%) and, together with Finland, usage of working time for learning activities (84%), as well as the second highest level of in-house training (50%). Germany has the lowest levels in in-house training (37%) and usage of working time for learning (58%), as well as the second lowest levels in general training support (76%) and training by third parties (45%). France is slightly above average in the first three categories and well above average in usage of working time for learning (75%). Italy has the lowest levels of general support (70%) and training by third parties (41%) and has also low figures in the other two types of training offers. Portugal is, together with Finland, lowest in in-house training (38%), slightly below average in general support (78%) and third-party training (49%), but quite high in usage of working time for learning (76%). Finland is above average in general training (86%) and third-party training (57%), highest in usage of working time (84%) and lowest in in-house training. UK firms are the leaders in in-house training (57%) and also very high in the other categories.

Figure 2-4: IT training offers in EU real estate enterprises (in %)

Base: EU-7 (DK, D, F, I, P, FIN, UK), all real estate enterprises (n between 656 and 666)

Figures weighted by employment (enterprises representing ...% of employees). Reporting period: June/July 2002

Source: e-Business W@tch (2003)

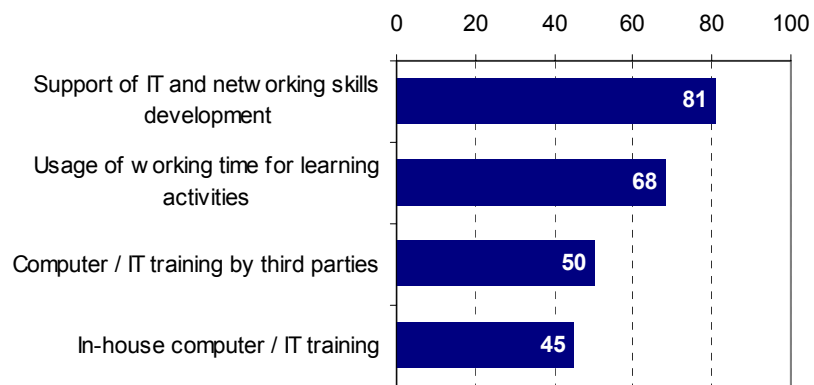


Table 2-6: IT training offers in EU real estate enterprises by country (in%)

	Support of IT and networking skills development	In-house computer / IT training	Computer / IT training by third parties	Usage of working time for learning activities
EU7	81	45	50	68
DK	92	50	72	84
D	76	37	45	58
F	83	47	53	75
I	70	40	41	59
P	78	38	49	76
FIN	86	38	57	84
UK	91	57	59	75

Base: EU-7 (DK, D, F, I, P, FIN, UK), all real estate enterprises (n between 656 and 666). Figures weighted by employment (enterprises representing ...% of employees). Reporting period: June/July 2002.

Source: e-Business W@tch (European e-Business Survey 2002)

Company size classes: The pattern of IT training in the three size classes is different. Large firms offer significantly more in-house computer or IT training (82%) than medium-sized (62%) and small firms (38%). The same ranking applies to third-party training. As regards general training support, large firms are on the same level than medium-sized firms (92%), while small firms are behind (78%). Medium-sized enterprises reveal the highest level of usage of working time for learning activities (72%), while 67% of small and large firms offer this opportunity.

Table 2-7: Training in EU real estate enterprises by company size (in%)

	Support of IT and networking skills development	In-house computer / IT training	Computer / IT training by third parties	Usage of working time for learning activities
EU7	78	39	45	67
0-49	78	38	45	67
50-249	92	62	67	72
250+	92	82	74	67

Base: EU-7 (DK, D, F, I, P, FIN, UK), all real estate enterprises (n between 656 and 666). Figures in % of enterprises. Reporting period: June/July 2002

Source: e-Business W@tch (European e-Business Survey 2002)

Ways of learning for IT skills development

Altogether: The interviewees were furthermore asked how important they would rate several ways of learning for the IT skills development in their company. On-the-job learning is most prevalent: In enterprises representing 55% of the employees it is very important and in 38% fairly important. Self-

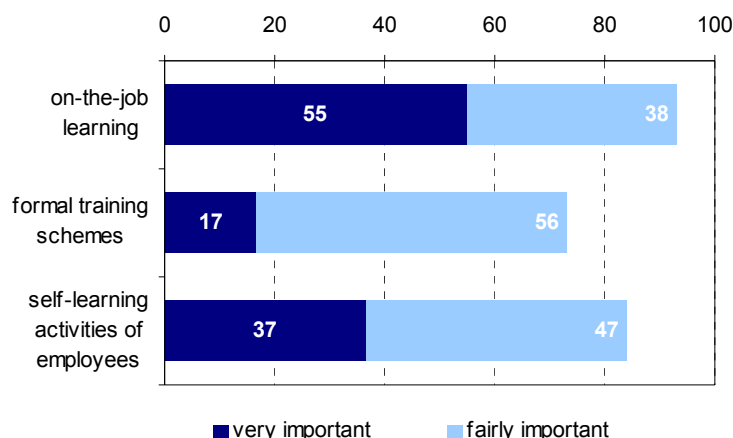
learning activities of employees is very important for 37% and fairly important for 47%. Formal training schemes are of fair importance in firms representing 56% of the employees but very important in only 17%.

Figure 2-5: Importance of ways of learning IT skills in EU real estate enterprises by country (in %)

Base: EU-7 (DK, D, F, I, P, FIN, UK), real estate enterprises using computers (n = 658)

Figures weighted by employment (enterprises representing ...% of employees). Reporting period: June/July 2002

Source: *e-Business W@tch* (2003)



Countries: The assessment of importance of ways of learning ICT skills differs widely between the countries. Danish real estate firms stated importance levels below average except an above-average level of answers of “very important” for formal training schemes. German real estate firms are about average in their assessment when considering answers of very and fairly important together. In France, formal training schemes appear to be less important than in the other countries. Italian and Finnish interviewees were above average in their assessments of “very important” and below average in “fairly important”. Portugal has the highest shares of answers of “very important” for all types: on-the-job learning (73%), formal training schemes (51%) and self-learning activities (63%). The UK is about average in formal training schemes and self-learning activities, but on-the-job learning revealed a relatively high level of answers of “very important” (66%).

Table 2-8: Importance of ways of learning IT skills in EU real estate enterprises by country (in%)

	On-the-job learning		Formal training schemes		Self-learning activities of employees	
	Very important	Fairly important	Very important	Fairly important	Very important	Fairly important
EU7	55	38	17	56	37	47
DK	49	36	22	49	36	40
D	48	45	18	61	35	46
F	50	42	8	57	31	51
I	64	29	31	52	52	38
P	73	20	51	40	63	26
FIN	73	25	28	45	52	43
UK	66	31	14	53	36	50

Base: EU-7 (DK, D, F, I, P, FIN, UK), real estate enterprises using computers (n = 658).

Figures weighted by employment (enterprises representing ...% of employees). Reporting period: June/July 2002

Source: *e-Business W@tch* (European e-Business Survey 2002)

Company size classes: The largest differences between the three size classes were found for self-learning activities. While this type of learning IT skills is very important in 39% of small enterprises and 36% of medium-sized enterprises, the level of high importance is only 16% in large firms. However, 67% of the interviewees from large firms attributed fairly high importance to self-learning, which is much higher than among medium-sized (50%) and small firms (45%). The levels of importance of on-the-job learning are quite similar in the three size classes. Formal training schemes reveal a higher level of fair importance in medium-sized and large companies compared to small firms.

Table 2-9: Importance of ways of learning IT skills in EU real estate enterprises by company size

	On-the-job learning		Formal training schemes		Self-learning activities of employees	
	Very important	Fairly important	Very important	Fairly important	Very important	Fairly important
EU7	55	38	17	55	39	45
0-49	55	38	17	55	39	45
50-249	51	43	13	69	36	50
250+	54	43	17	64	16	67

Base: EU-7 (DK, D, F, I, P, FIN, UK), real estate enterprises using computers (n = 658).
Figures in % of enterprises. Reporting period: June/July 2002

Source: e-Business W@tch (European e-Business Survey 2002)

Recruitment activities and difficulties

Altogether: Real estate enterprises representing 16.4% of the employees reported to having recruited or tried to recruit staff with special IT skills during the last twelve months. 8.9% of these companies said that they experienced great difficulties and 25.9% said they had some difficulties to find staff with such skills.

Sector comparison: In sector comparison, the percentage of real estate firms having recruited or tried to recruit IT staff is the lowest. Similarly low shares are performed by the metal products sector (16.8%), the health and social services sector (16.9%) as well as food, beverages and tobacco (17.1%). The shares of real estate companies that experienced great or some difficulties in recruiting IT staff is among the lowest in sector comparison.

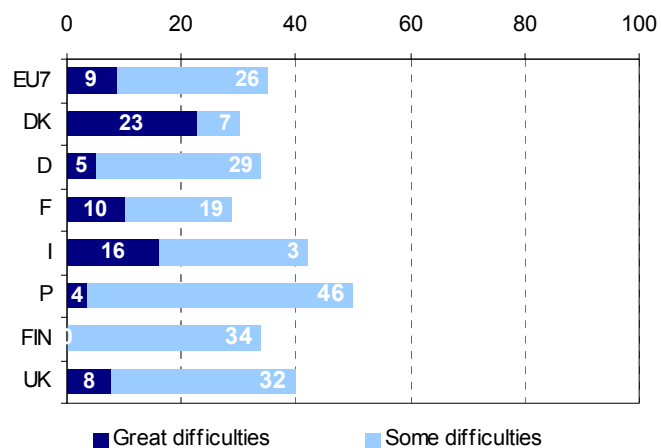
Countries: Recruitment levels and difficulties differed moderately between the countries. Recruitment activities were highest in Portugal, where real estate enterprises representing 23.7% of the employees tried to recruit IT staff, followed by France (20.1%), the UK (19.1%) and Italy (15%). Recruitment activities were lowest in Finland (10.6%), Germany (11%) and Denmark (13.7%). As regards recruitment difficulties, Portugal has the highest level of difficulties, with firms representing 46% of the employees reporting some and 4% great difficulties. Recruitment was also difficult in Italy (16% great and 26% some difficulty) and the UK (8% / 32%). The level of great difficulties was highest in Denmark (23%). On the other side, none of the Finish firms interviewed reported great difficulties.

Figure 2-6: Difficulties in recruiting IT specialists in EU real estate enterprises by country (in %)

Base: EU-7 (DK, D, F, I, P, FIN, UK), real estate enterprises having recruited or tried to recruit IT specialists (n=124)

Figures weighted by employment (enterprises representing ...% of employees). Reporting period: June/July 2002

Source: e-Business W@tch (2003)



Company size classes: The majority of large companies (57%) recruited or tried to recruit IT staff, whereas the recruitment levels in medium-sized firms (28%) and small firms (11%) were much lower. Accordingly, recruitment difficulties were reported to be highest in large companies (16% great difficulties, 29% some) and lowest in small companies (8% / 20%). Only a negligible share of medium-sized firms reported great difficulties (<1%).

Table 2-10: Difficulties in recruiting IT specialists in EU real estate enterprises by company size (in %)

	Difficulties in recruiting IT specialists	
	great difficulties	some difficulties
EU7	8	20
0-49	8	20
50-249	>1	35
250+	16	29

Base: EU-7 (DK, D, F, I, P, FIN, UK), real estate enterprises having recruited or tried to recruit IT specialists (n=124). Figures in % of enterprises. Reporting period: June/July 2002.

Source: e-Business W@tch (European e-Business Survey 2002)

2.3 E-business activities

2.3.1 Internal processes

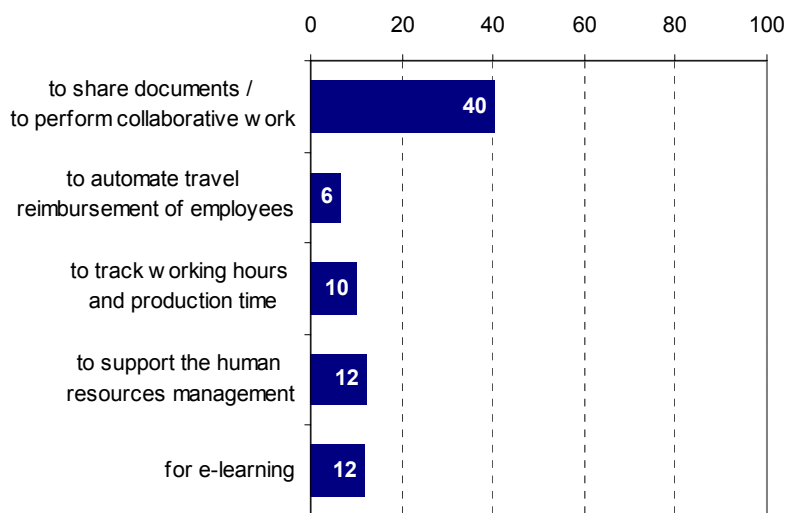
Altogether: Real estate enterprises representing 40% of the sector’s employees use online technologies other than e-mail to share documents or to perform collaborative work. Other forms of internal e-business processes are much less common: The human resources management and e-learning are supported by online technologies in 12%, working hours and production time are tracked in 10%, and travel reimbursements of employees are automated in 6%.

Figure 2-7: Internal e-business processes in EU real estate enterprises: Use of online technologies for various purposes (in %)

Base: EU-7 (DK, D, F, I, P, FIN, UK), all real estate enterprises (n = 668)

Figures weighted by employment (enterprises representing ...% of employees). Reporting period: June/July 2002

Source: e-Business W@tch (2003)



Sector comparison: In sector comparison the real estate sector performs some of the lowest levels of internal e-business processes. The percentage of real estate firms automating travel reimbursements of employees is the lowest of all sectors, and the levels for tracking working hours or production time, supporting the human resources management as well as e-learning are second lowest. Only in sharing documents or performing collaborative work, the real estate sector is fairly high, that is to say slightly below the average of all sectors.

Countries: Denmark is again the country with the highest levels of e-business use in most cases: enterprises representing 60% of the employees practice collaborative work with online technologies, 16% track working hours and production time, and 23% allow e-learning. Germany tends to be below the sample average but has a high share of firms tracking working hours (16%). France is slightly above average in collaborative work only (42%). Italy has a level of e-learning slightly above average (14%) but is average or below in the other applications. Portugal has the lowest level of tracking

working hours (4%) but is well above average in support of human resources management (18%) and e-learning (19%). Finish real estate firms reveal the highest percentage for support of human resources management (36%) and are second highest in e-learning (21%). UK firms have the highest level of automated travel reimbursements (11%) and are below average only in tracking working hours (8%).

Table 2-11: Internal e-business processes in EU real estate enterprises by country (in %)

	Collaborative work	Track working hours and production time	Support of human resources management	Automate travel reimbursement of employees	E-learning
EU7	40	10	12	6	12
DK	60	16	15	3	23
D	33	16	9	8	10
F	42	6	8	2	9
I	33	9	10	6	14
P	41	4	18	3	19
FIN	50	13	36	5	21
UK	52	8	23	11	18

Base: EU-7 (DK, D, F, I, P, FIN, UK), all real estate enterprises (n = 668). Figures weighted by employment (enterprises representing ...% of employees). Reporting period: June/July 2002.

Source: e-Business W@tch (European e-Business Survey 2002)

Company size classes: Large real estate firms clearly outperform SMEs in internal e-business processes. Except in e-learning, large firms have a higher percentage than medium-sized firms, and medium-sized firms have a higher share than small firms. As regards e-learning, the levels are very similar: 12% in small firms and 13% in medium-sized and large firms.

Table 2-12: Internal e-business processes in EU real estate enterprises by company size in %

	Collaborative work	Track working hours and production time	Support of human resources management	Automate travel reimbursement of employees	E-learning
EU7	36	8	9	5	12
0-49	36	8	9	5	12
50-249	55	18	15	10	13
250+	63	24	37	19	13

Base: EU-7 (DK, D, F, I, P, FIN, UK), all real estate enterprises (n = 668). Figures in % of enterprises. Reporting period: June/July 2002.

Source: e-Business W@tch (European e-Business Survey 2002)

2.3.2 Marketing and sales

Website provision and management

Altogether: As reported in the first e-Business Watch report on the real estate sector, 60% of the real estate enterprises have a website and 14% plan to introduce one within one year. Of those who do already have website, 70% reported to have them hosted by external service providers. 65% had the web design done by external providers, and 57% had website maintenance and updating done by external providers. 21% make use of a content management system that allows different departments to access the website and update information.

Countries: Country differences in external website service use are significant only for web hosting. French real estate firms have the highest propensity to have web hosting done by external providers (86%), followed by Portugal (72%). External web hosting is lowest in Finland (53%) and Italy (58%).

The levels of web design outsourcing was quite similar within the sample countries, with France and Finland performing the highest shares (69%) and Italy the lowest (58%). Website maintenance and updating was highest in Germany (63%) and lowest in Denmark and the UK (51%), but again the differences are not large. Website content management systems are most prevalent in France (34%), Portugal (30%) and Italy (26%) but quite rare in German real estate firms (12%).

A certain share of real estate firms in all countries offers website content in English, indicating an international market orientation. Apart from the UK, the share of English website content is highest in Portugal (64%), followed by France (27%) and Finland (26%). The share of companies with English website content is lowest in Germany (10%) and Italy (22%). Portuguese real estate firms are the only ones with significant levels of website content in other languages than their country language and English: 24% offer content in French, 20% in German and 10% in Spanish. This points to a significant international orientation of Portuguese real estate enterprises. Probably due to neighbourhood relations, 15% of Finish real estate firms offer websites in Swedish.

Table 2-13: External website service use in EU real estate enterprises by country (in%)

	Web hosting by external service providers	Web design by external service providers	Web site maintenance / updating by external service providers
EU7	70	65	57
DK	67	64	51
D	67	63	63
F	86	69	56
I	58	58	58
P	72	66	60
FIN	53	69	57
UK	67	68	51

Base: EU-7 (DK, D, F, I, P, FIN, UK), real estate enterprises having a website (n = 418). Figures weighted by employment (enterprises representing ...% of employees). Reporting period: June/July 2002

Source: e-Business W@tch (European e-Business Survey 2002)

Company size classes: Large enterprises make more use of web hosting by external service providers (85%) than medium-sized (74%) and small companies (68%). External web design reveals a similar ranking. As regards website maintenance, small firms have the highest share (59%), but not much higher than in large firms (55%) and medium-sized ones (52%). Content management systems are much more prevalent in large companies (35%) than in small companies (20%) and in medium-sized ones (18%).

Table 2-14: External website service use in EU real estate enterprises by company size (in%)

	Web hosting by external service providers	Web design by external service providers	Web site maintenance / updating by external service providers
EU7	68	63	59
0-49	68	63	59
50-249	74	66	52
250+	85	78	55

Base: EU-7 (DK, D, F, I, P, FIN, UK), real estate enterprises having a website (n = 418). Figures in % of enterprises. Reporting period: June/July 2002

Source: e-Business W@tch (European e-Business Survey 2002)

Characteristics of selling online

Altogether: As described in the first report on e-business in real estate, enterprises representing 14% of real estate employees sell online and 7% plan to do so. Further characteristics of online sales in real estate include:

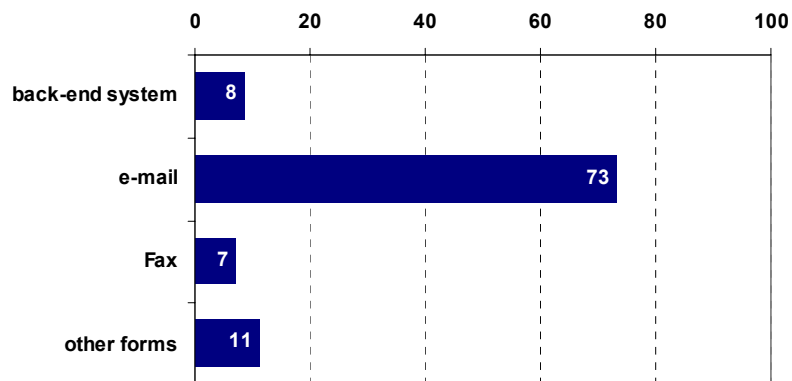
- **Online orders processing:** In enterprises representing 73% of the employees, an automatic e-mail is created when an order comes in. A full integration of online orders with the back-end system is reported by only 8%, and a fax is generated in 7%. 11% apply other forms. Only one answer was possible. A further question was about business process triggering: 23% reported that an online order triggers electronically driven business processes. These figures show that real estate enterprises are far away from comprehensive e-business solutions.
- **Distribution channels:** Enterprises representing 78% of the employees distribute their goods through the company's website, 28% through electronic market places, 10% via extranet, 6% via EDI and 3% through mobile commerce.⁶
- **Geographical target market:** Enterprises representing 46% of the employees mainly sell to a local market, 37% to a national market and 16% to a global market – with only one answer possible.
- **Security:** Online-selling enterprises representing 30% of the employees said that they provide secure transactions by means of a secure server using Secure Sockets Layer (SSL) protocol.
- **After-sales services** are offered by enterprises representing 19% of real estate employees.

Figure 2-8: Processing of online orders in EU real estate enterprises

Base: EU-7 (DK, D, F, I, P, FIN, UK), real estate enterprises selling online (n = 85)

Figures weighted by employment (enterprises representing ...% of employees). Reporting period: June/July 2002

Source: e-Business W@tch (2003)



Sector comparison: The real estate sector appears to be less developed in online sales in comparison with the other sectors of the survey. However, it should be considered that many real estate firms – above all public housing providers – do not sell at all but only rent. Characteristics of online sales include:

- **Online orders processing:** The employment-weighted percentage of companies where online orders trigger an automatic business process is the smallest of all sectors, and the level of full integration in the back-end system is among the smallest. However, the real estate sector is slightly above average in automatic e-mail creation, fax generation and other forms of integration.
- **Distribution channels:** As regards distribution channel use, the real estate sector is below the average of all sectors. Distribution through the company's website is slightly below the sector average of 82.6%; the same applies to m-commerce (sector average of 5.9%) and extranet (11.9%). The use of electronic marketplaces and EDI are well below the average (which is 34.8% for e-marketplaces and 14.7% for EDI).

Countries: Due to the small share of real estate enterprises selling online and the following small numbers in the sample, a country breakdown to characteristics of online selling is not meaningful.

Company size classes: Medium-sized firms appear to be more advanced than large and small firms in several respects of online selling. Characteristics of online sales in real estate enterprises by size class include:

⁶ Multiple answers were possible.

- *Online orders processing:* The processing of online orders appears to be most advanced in medium-sized enterprises (see table 2-15): 15% reported to having integrated online orders in their back-end system, while it was only 13% in large enterprises and 6% in small enterprises. As regards the creation of an automatic e-mail, 78% of medium-sized enterprises support this function, whereas the share is 68% in small enterprises and only 29% in large enterprises. An automatic fax is created in 7% of small enterprises, while none of the sample firms in the medium and large size class reported this function. The triggering of an electronically drive business process occurs most often in medium-sized enterprises (30.4%), followed by small (22.4%) and large (7.7%) enterprises. The good performance of medium-sized enterprises in online orders processing may be due to higher flexibility compared to large firms.
- *Distribution channels:* The own website is a more important distribution channel for SMEs than for large companies: 79% of medium-sized, 78.3% of small enterprises and 70.8% of large enterprises practice e-commerce through their website. Electronic market places are more important for large firms (53.6%) than for medium-sized (23.0%) and small enterprises (26.5%). Extranets and EDI are also much more often used by large firms than by SMEs. The only sample companies practicing mobile commerce belong to the smallest size class (4%).
- *Geographical target market:* The largest share of small firms (53.2%) is focused on the local market, while 68.8% of the medium-sized firms and 91.4% of the large ones are oriented towards the national market.
- *Security:* SSL technology is more prevalent among medium-sized firms (42.0%) than in large (36.4%) and small firms (27.5%).
- *After-sales services* can be found more often in medium-sized enterprises (37.9%) than in large (25.9%) and small firms (16.4%).

Table 2-15: Processing of online orders in EU real estate enterprises by company size (in%)

	Processing of online orders ...			
	... is integrated in back-end system	... creates an automatic e-mail	... creates an automatic fax	... is integrated in other forms
EU7	6	74	8	12
0-49	6	74	8	12
50-249	15	78	0	7
250+	29	68	0	4

Base: EU-7 (DK, D, F, I, P, FIN, UK), real estate enterprises selling online (n = 85)
 Figures in % of enterprises. Reporting period: June/July 2002

Source: e-Business W@tch (European e-Business Survey 2002)

2.4 Impact of e-business

2.4.1 Business process changes and satisfaction with e-business

E-business impact on internal processes and structures

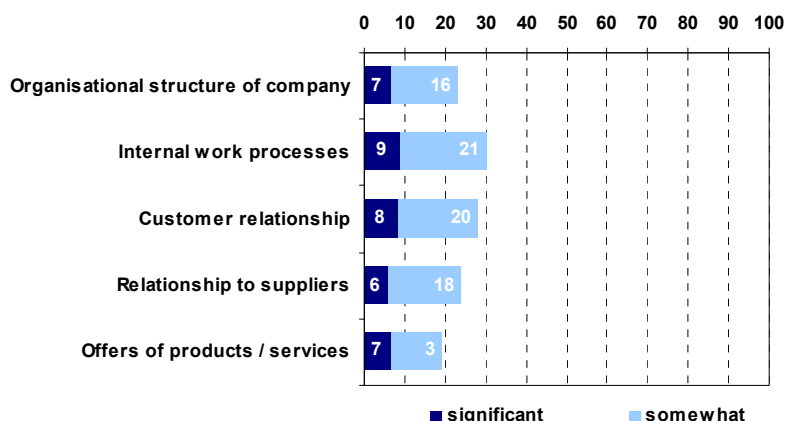
Altogether: E-business did not have much impact on internal processes and structures in the real estate sector yet. The largest changes were reported for internal work processes: enterprises representing 9% of the employees reported a significant change and 21% some change (see figure 2-9). The according levels for changes in customer relationship were 8% and 20%, followed by changes in the organisational structure of the company (7% / 16%) and relationship to suppliers (6% / 18%). Changes in offers of products and services were reported only by 10% (7% significant and 3% somewhat). These low levels show that there is much unexploited potential for e-business introduction and sophistication in the real estate sector.

Figure 2-9: Impact of e-business on internal e-business processes in EU real estate enterprises in %

Base: EU-7 (DK, D, F, I, P, FIN, UK), all real estate enterprises (n = 668)

Figures weighted by employment (enterprises representing ...% of employees). Reporting period: June/July 2002

Source: e-Business W@tch (2003)



Sector comparison: In all types of impacts, the real estate sector is about average in the assessments of impacts of e-business on internal e-business processes and structures. This may be regarded slightly inconsistent with the below-average application of ICTs and e-business tools in the real estate sector. A spin-off from under-investment in ICT tends to be that expectations of anything to do with technology are very low in the sector. The assessment that real estate is about average in the range of e-business impacts may well reflect this paucity of expectation.

Countries: Despite the high level of e-business application in Denmark, the assessment of impacts on internal processes and structures is below average in all cases (see table 2-16). There may be some kind of Scandinavian modesty involved in this answering behaviour, particularly when considering that Finish interviewees, too, tended to assess the impacts below average. German interviewees very often answered “somewhat”, and Italians revealed the highest levels of answers of “significant” in all cases. French and Portuguese assessments of impacts were always below average, while UK interviewees tended towards the average.

Table 2-16: Impact of e-business on internal processes in EU real estate enterprises by country (in %)

	Organisational structure of company		Internal work processes		Customer relationship		Relationship to suppliers		Offers of products / services	
	signifi- cant	some- what	signifi- cant	some- what	signifi- cant	some- what	signifi- cant	some- what	signifi- cant	some- what
EU7	7	16	9	21	8	20	6	18	7	13
DK	5	6	6	13	6	14	3	14	3	6
D	8	23	7	35	7	30	6	25	10	10
F	7	7	8	7	8	15	6	11	4	11
I	11	20	16	15	16	13	15	14	11	14
P	2	20	8	19	7	16	6	16	9	8
FIN	2	9	4	20	5	21	1	18	6	19
UK	4	17	9	26	7	18	3	20	4	17

Base: EU-7 (DK, D, F, I, P, FIN, UK), all real estate enterprises (n = 668). Figures weighted by employment (enterprises representing ...% of employees). Reporting period: June/July 2002

Source: e-Business W@tch (European e-Business Survey 2002)

Company size classes: Small firms reported the highest levels of change in all cases. As regards the relationship to suppliers, the reported changes are as high as in large firms (7% “significant” and 18% “somewhat” in small firms and 5% / 20% in large firms). The levels of reported change are similar among medium-sized and large firms, with medium-sized firms stating higher levels of significant impact and higher percentages of some impact in large firms.

Table 2-17: Impact of e-business on internal processes in EU real estate enterprises by company size in %

	Organisational structure of company		Internal work processes		Customer relationship		Relationship to suppliers		Offers of products / services	
	signifi- cant	some- what	signifi- cant	some- what	signifi- cant	some- what	signifi- cant	some- what	signifi- cant	some- what
EU7	7	17	10	21	10	20	7	18	8	13
0-49	7	17	10	21	10	20	7	18	8	13
50-249	8	8	9	16	3	18	3	17	6	9
250+	2	13	1	25	1	19	5	20	1	12

Base: EU-7 (DK, D, F, I, P, FIN, UK), all real estate enterprises (n = 668). Figures in % of enterprises.
Reporting period: June/July 2002

Source: e-Business W@tch (European e-Business Survey 2002)

Changes in business conduction through e-business

Altogether: The interviewees were asked to what extent e-business has changed the way in which their company conducts business. Enterprises representing 7% of the real estate employees reported significant change, and 29% stated some impact.

Countries: German real estate firms reported the highest levels of change (8% significant and 41% somewhat), followed by the UK (9% / 29%), Italy (10% / 25%) and Finland (9% / 29%). The smallest levels of change were reported from Portugal (3% / 17%), Denmark (5% / 16%) and France (3% / 19%), all three on quite the same level.

Company size classes: Small and medium-sized firms reported much more change of business conduction through e-business than large firms: 7% of SMEs stated significant changes while only 0.2% of the large firms did so. While 30% of the small firms and 27% of the medium-sized ones reported some change, the level was much smaller with 16% among large firms.

Figure 2-10: Changes of business conduction through e-business in EU real estate enterprises in %

Base: EU-7 (DK, D, F, I, P, FIN, UK), all real estate enterprises (n = 668)
Figures weighted by employment (enterprises representing ...% of employees). Reporting period: June/July 2002

Source: e-Business W@tch (2003)

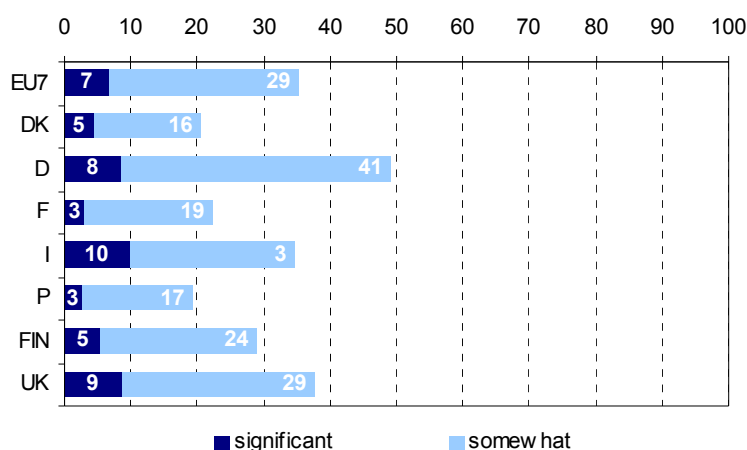


Table 2-18: Changes of business conduction in EU real estate enterprises by company size class in %

	Changes of the way of conducting business through e-business	
	significant	somewhat
EU7	7	30
0-49	7	30
50-249	7	27
250+	<1	16

Base: EU-7 (DK, D, F, I, P, FIN, UK), all real estate enterprises (n=668). Figures in % of enterprises.
Reporting period: June/July 2002

Source: e-Business W@tch (European e-Business Survey 2002)

Overall satisfaction with e-business

Altogether: The interviewees were asked: “Considering all e-business activities and initiatives of your company together, how satisfied are you with the overall effects and success of these activities?” Enterprises representing 10% of the employees reported to be very satisfied, 80% to be fairly satisfied, 8.4% to be fairly disappointed and 1.4% to be very disappointed.

Sector comparison: In sector comparison the level of very high satisfaction is slightly below the average of 14.2%, and the level of fairly high satisfaction is the highest of all sectors together with the food, beverages and tobacco industry.

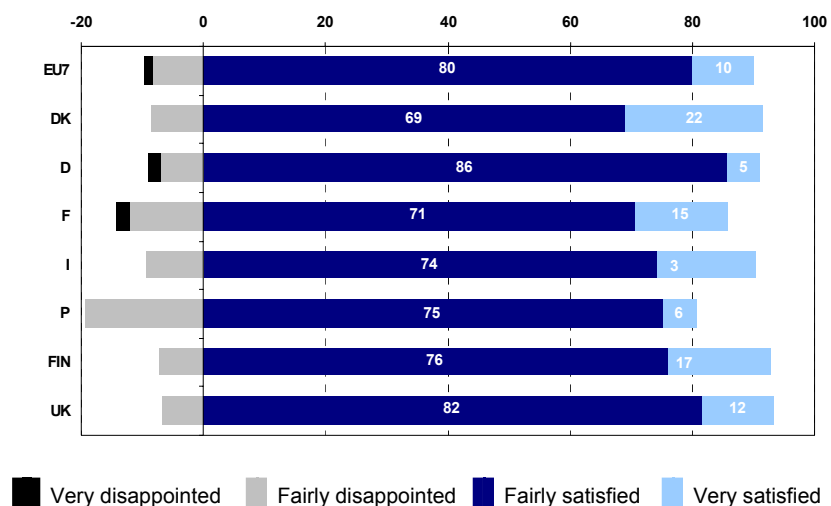
Countries: In five countries the level of overall satisfaction was quite similar at slightly more than 90%: the UK, Finland, Denmark, Germany and Italy (see figure 2-11). Danish firms stated the highest level of very high satisfaction (22%), and German real estate firms reported the highest percentage of fairly high satisfaction (86%). The level of satisfaction was smallest in Portugal (75% fairly satisfied and 6% very satisfied). 71% of French real estate firms were fairly satisfied and 15% very satisfied. Germany and France were the only countries with answers of “very disappointed”.

Figure 2-11: Satisfaction with e-business in EU real estate enterprises in %

Base: EU-7 (DK, D, F, I, P, FIN, UK), real estate enterprises expressing that they do e-business (n = 276)

Figures weighted by employment (enterprises representing ...% of employees). Reporting period: June/July 2002

Source: e-Business W@tch (2003)



Company size classes: The level of very high satisfaction is largest in large companies: 15% compared with 10% in small and 8% in medium-sized firms. The level of fairly high satisfaction is very similar in the three size classes. Disappointment is most significant in medium-sized enterprises: 9% reported to be fairly disappointed and 4% very disappointed.

Table 2-19: Satisfaction with e-business in EU real estate enterprises by company size

	Very satisfied	Fairly satisfied	Fairly disappointed	Very disappointed
EU7	10	80	9	1
0-49	10	80	9	1
50-249	8	79	9	4
250+	15	79	6	0

Base: EU-7 (DK, D, F, I, P, FIN, UK), real estate enterprises practising e-business (n = 276). Figures in % of enterprises. Reporting period: June/July 2002

Source: e-Business W@tch (2003)

2.4.2 Prospects for the future

Future significance of e-business

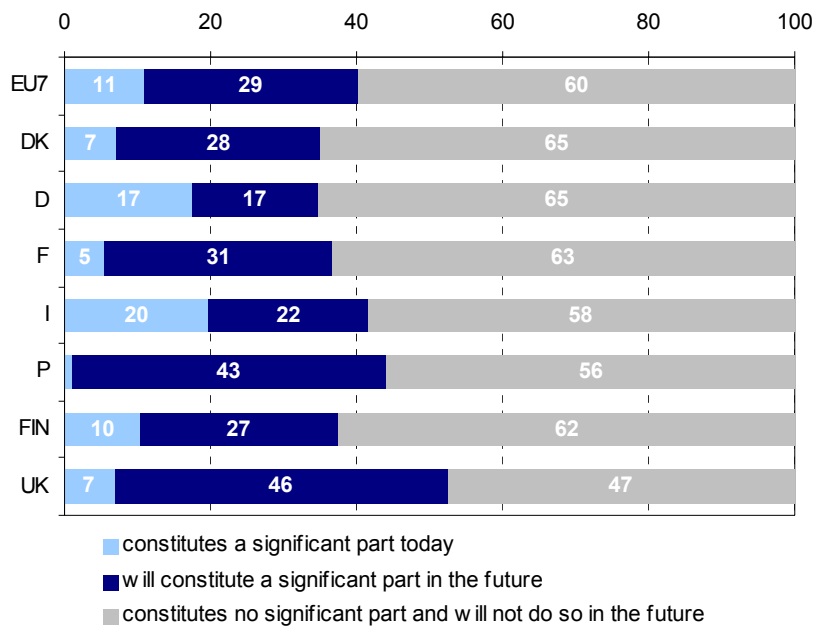
Altogether: The interviewees were asked if e-business already constitutes a significant part of the way their companies operate today, or some part or none at all. Enterprises representing 11% of the real estate employees assessed e-business to be significant for their companies.⁷ Those interviewees who answered “some part”, “none at all” or “don’t know” were asked if they think that e-business will constitute a significant part of their companies’ operations in the future, that is to say within the next two years. Enterprises representing 29% of the employees predicted that e-business will constitute a significant part within two years, and 60% said this will not be the case.

Figure 2-12: Significance of e-business in EU real estate enterprises by country (in %)

Base: EU-7 (DK, D, F, I, P, FIN, UK), all real estate enterprises (n = 668).

Figures weighted by employment (enterprises representing ...% of employees). Reporting period: June/July 2002

Source: *e-Business W@tch* (2003)



Countries: Denmark has, together with Germany, the highest share of interviewees stating that e-business does not play a role in their enterprise and will not do so in the future (65%, employment-weighted); France (63%) and Finland (62%) follow close behind. Italian interviewees most often gave answers of “constitutes a significant part today” (20%), followed by the Germans (17%). In Portugal, only 1% of the interviewees attributed e-business a significant part today. UK real estate firms performed the highest level of answers of “will constitute a significant part in the future” (46%), followed by Portugal (43%) and France (31%). The lowest level of future importance of e-business was predicted for Germany (17%).

Company size classes: Small firms are the ones where e-business most often does already constitute a significant part today (12%). E-business is less important in medium-sized (9%) and large firms (6%). However, large firms have the highest share of interviewees predicting that e-business will constitute a significant part in the future (35%). Medium-sized firms are not so confident in this respect (19%).

⁷ Slight differences between the values for “significant part today” result because of different levels of answers of “don’t know” (which are excluded) in the two presentations.

Table 2-20: Significance of e-business in EU real estate enterprises by company size (in %)

	In the company's operation, e-business...		
	constitutes a significant part today	will constitute a significant part in the future	constitutes no significant part and will not do so in the future
EU7	12	29	59
0-49	12	29	59
50-249	9	19	72
250+	6	35	59

Base: EU-7 (DK, D, F, I, P, FIN, UK), all real estate enterprises (n=668). Figures in % of enterprises. Reporting period: June/July 2002.

Source: e-Business W@tch (European e-Business Survey 2002)

Intended expenditures on e-business

Altogether: At the very end the interviewees were asked if their company will rather increase or decrease the expenditure on e-business technologies within the next twelve months or if it will stay the same. In enterprises representing 27% of real estate employees the expenditure is said to increase, in 2% it will decrease and in 67% it will remain the same.

Sector comparison: In sector comparison, the share of enterprises intending to increase e-business expenditures is below the average (which is 33%) and the share intending to maintain the same level is above the average of 59%. Thus it appears that real estate firms are not likely to catch up in e-business use in the near future but they will probably not fall further behind either. The share of firms that are likely to decrease their e-business spending is about the same (average: 3%).

Countries: Italian real estate firms were those with the largest share stating to increase e-business expenditures within the next twelve months (42%) (see table 2-21). The second largest share was found in the country that does already outperform the others: Denmark (39%). Increase intentions were rather similar in the UK (35%), Finland (33%) and Portugal (33%). German real estate firms revealed the smallest inclination to increase expenditures (19%) but the largest to rather decrease them (5%). In France, the intention to increase e-business expenditures was slightly below average (24%).

Table 2-21: Intended expenditures on e-business in EU real estate enterprises by country (in %)

	Within the next 12 months, expenditures on e-business technologies will...		
	rather increase	rather decrease	stay the same
EU7	28	2	70
DK	40	1	59
D	20	5	75
F	25	1	74
I	46	1	53
P	42	2	56
FIN	34	3	63
UK	36	0	64

Base: EU-7 (DK, D, F, I, P, FIN, UK), all real estate enterprises (n = 668). Figures weighted by employment (enterprises representing ...% of employees). Reporting period: June/July 2002.

Source: e-Business W@tch (European e-Business Survey 2002)

Company size classes: Large firms show a much higher intention to increase their e-business expenditures than SMEs. While 41% of the large firms will rather increase expenditures, the levels are 27% for medium-sized firms and 26% for small firms (see table 2-22). A decrease is planned in 2% of the large and the small firms, while no medium-sized sample firm expressed the intention to decrease the level of e-business spending.

Table 2-22: Intended expenditures on e-business in EU real estate enterprises by company size (in %)

	Within the next 12 months, expenditure on e-business technologies will...		
	rather increase	rather decrease	stay the same
EU7	26	2	68
0-49	26	2	68
50-249	27	0	73
250+	41	2	53

Base: EU-7 (DK, D, F, I, P, FIN, UK), all real estate enterprises (n=668). Figures in % of enterprises.
Reporting period: June/July 2002

Source: *e-Business W@tch* (European e-Business Survey 2002)

3 Summary and conclusions

3.1 Summary of main findings

Economic profile of the real estate sector: high share of small companies

The real estate sector is of particular interest for any study of e-business implications, and for the *e-Business W@tch* in particular, because it serves important economic and social functions and it has a high PC penetration. The real estate sector in the EU comprises around 755,000 companies. The number has increased in almost all countries for which time series data are available, maybe reflecting opportunities for new companies entering the market. Around 1.7 million persons work in the EU real estate sector, which is 1% of total employment in the EU. The share of real estate employees is particularly high in Sweden, Denmark and the UK and particularly low in Portugal, Austria, Belgium and Ireland. In the past ten years, the trend was for the number of employees to increase in most countries. The EU real estate sector is characterised by a high share of small companies: around three-quarters of them are run by a self-employed person with no employees. Labour productivity is highest in the Netherlands, Sweden and Denmark. The lowest labour productivity is to be found in Ireland, Portugal and Italy.

Status of e-business application: a wide potential of opportunities

The real estate market is characterised by a particular lack of transparency. The Internet can facilitate the identification of suitable properties by providing detailed information on basic object characteristics and the environment, as well as through visualisation. The Internet can also provide additional information such as price comparisons, financial services links, removal information, legal assistance and checklists.

Web-based brokers are trying to attract real estate companies by promising to supply them with contacts to individuals looking for housing. However, the share of objects sold through the Internet is still very small. The potential of Internet offerings is not uniform throughout the sector. It can be expected that the Internet will be more important for the mass-market of relatively small buildings transacted for individual housing than for the large buildings purchased by businesses. Marketing expenses for establishing a web-based real estate brokerage are said to be high. Thus there will probably be only a small number of providers which survive with their business model.

E-business applications internal to a housing company can support facility management tasks such as client data administration, e-mail correspondence with tenants and owners, and bookkeeping. Service applications can support maintenance, cleaning and remote control of facilities. Such services can be integrated into an Internet-based customer care centre beneficial for both the administrators and the tenants. There are already notable examples of such applications.

The real estate sector is not a forerunner in ICT use and e-business applications. In general, the sector is taking up innovations rather late, because products are quite heterogeneous, transaction volumes are high, and innovation cycles are long. Impediments at the firm level are a lack of personal capacities within the companies, lack of Internet access among buyers and tenants, security issues regarding the Internet, clerical staff lacking PC know-how, and lack of compatibility of downstream systems.

Survey findings in sector comparison: real estate tends to be below average

The analysis of survey questions that were not dealt with in the first report on e-business in the real estate sector confirm the results of the first report: In sector comparison, the real estate sector is usually below sector average. However, while the application level is small, the level of reported changes in internal processes is average, and the level of overall satisfaction with e-business is among the highest. In detail:

- **ICT infrastructure:** The real estate sector has an average level of analogue dial-up modem use and an ISDN and DSL use slightly above average. The share of enterprises with “other fixed connections” is the lowest of all sectors. The real estate sector has the second lowest share of enterprises with remote access to the company’s computer system.
- **Recruiting:** The percentage of real estate firms having recruited or tried to recruit IT staff is the lowest. The shares of real estate companies that experienced great or some difficulties in recruiting IT staff is among the lowest in sector comparison.
- **Internal applications:** The real estate sector performs some of the lowest levels of internal e-business processes. The percentage of real estate firms automating travel reimbursements of employees is the lowest of all sectors, and the levels for tracking working hours or production time, supporting the human resources management as well as e-learning are second lowest. Only in sharing documents or performing collaborative work, the real estate sector is fairly high, that is to say slightly below the average of all sectors.
- **Marketing and sales:** The percentage of companies where online orders trigger an automatic business process is the smallest of all sectors, and the level of full integration in the back-end system is among the smallest. However, the real estate sector is slightly above average in automatic e-mail creation, fax generation and other forms of integration. As regards distribution channel use, the real estate sector is below the average of all sectors. Distribution through the company’s website is slightly below the sector average; the same applies to m-commerce and extranet. The use of electronic marketplaces and EDI are well below the average.
- **E-business impacts:** In all types of impacts of e-business on internal e-business processes and structures, the real estate sector is about average. This may be regarded slightly inconsistent with the below-average application of ICTs and e-business tools in the real estate sector. The level of very high satisfaction with e-business is slightly below the average, and the level of fairly high satisfaction is the highest of all sectors. The high levels of satisfaction may reflect both the limited actual investment in e-business and the low levels of expectation.
- **Prospects for the future:** The share of enterprises intending to increase e-business expenditures is below average and the share intending to maintain the same level is above average. Thus it appears that real estate firms are not likely to catch up in e-business use in the near future but they will probably not fall further behind either. The share of firms that are likely to decrease their e-business spending is about the same compared with other sectors.

The below-average levels of ICT and e-business application can be explained by industry structure and culture: One of the underlying reasons affecting various aspects of the impact of ICT on the real estate sector is the relatively low levels of investment in ICT by the industry over time. Research by Ernst & Young showed that in the Real Estate sector, IT investment is typically around 2% of the cost base compared with an all industry average of 6%. In part this is a function of the structure of the industry dominated by a large number of small and medium-sized firms. Whilst larger firms have invested in an internal information and applications infrastructure, small firms don’t have the critical mass to make these applications essential to the operation of their business. In turn this leads to a culture of backward-looking investment to solve perceived problems rather than a forward-looking strategy of investment to gain competitive advantage. By and large, real estate companies do not see ICT as core to their business and from their perspective e-business is an ICT issue. This is demonstrated by the failure of the industry to take advantage of e-business opportunities and in the low rate of IT recruitment.

Survey findings broken down by country

The first *e-Business W@tch* survey revealed some notable national features of the real estate sector. There are some hints of a North-South gap between Denmark and Finland on the one hand and Portugal on the other. Important findings by country include:

- **Denmark** has the largest DSL penetration (62%) and the lowest level of “other fixed connections”. Denmark performs the highest level of firms with 2 - 10 MBit/s bandwidth (30%) and one of the lowest shares of bandwidth larger than 10MBit/s (4%). Denmark has the highest level of remote access to the company’s computer system (44%) and also the largest share of according plans (17%). Denmark has the highest levels of general training support (92%), training by third parties (72%) and one of the highest levels of usage of working time for learning activities (84%) as well as the second highest level of in-house training (50%). As regards ways of learning ICT skills, Danish real estate firms stated importance levels below average except an above-average level of answers of “very important” for formal training schemes. IT staff recruitment activities were below average, but Danish firms reported the highest level of great recruitment difficulties. Denmark is the country with the highest levels of internal e-business use in most types (collaborative work with online technologies, tracking working hours and production time, and e-learning). Website maintenance and updating by third parties revealed one of the lowest values (51%). Despite the high level of e-business application in Denmark, the assessment of e-business impacts on internal processes and structures is below average. Denmark also reported one of the lowest levels of change of business conduction due to e-business. However, Danish firms stated the highest level of very high satisfaction (22%) with e-business. Denmark has the second largest share of companies intending to increase e-business expenditures within the next twelve months (39%). Denmark has one of the highest shares of interviewees stating that e-business does not play a role in their enterprise and will not do so in the future.
- **Finland** performs the highest level of “other fixed connections” to the Internet (33%), and Finland has the second highest share of enterprises with a bandwidth of 2 – 10 MBit/s (26%). The percentage of firms with remote computer system access is second highest. Finland is above average in the offer of general training (86%) and third-party training (57%), highest in usage of working time for learning (84%) and lowest in in-house training. In ways of learning IT skills, Finish interviewees were above average in their assessments of “very important” and below average in “fairly important”. Finland revealed one of the lowest levels of IT staff recruitment activities, and none of the Finish firms interviewed reported great difficulties. Finish real estate firms revealed the highest percentage for support of human resources management (36%) and were second highest in e-learning (21%). External web hosting is lowest in Finland (53%). Finland performs one of the highest shares (69%) of web design outsourcing. Finish interviewees tended to assess the impacts of e-business on internal processes below average. The intention to increase IT spending were above average in Finland (33%). Finland has a high percentage of interviewees stating that e-business does not play a role in their company today and will not do so in the future (62%).
- **France:** French real estate enterprises have the second highest level of DSL users (36%) and they are best equipped with access technology of more than 10Bit/s (10%). The remote access level is rather low in France (13%). France is well above average in usage of working time for learning (75%). Formal training schemes appear to be less important than in the other countries. Activities to recruit IT staff were second highest in France. In internal e-business processes, France is slightly above average only in collaborative work. French real estate firms have the highest propensity to have web hosting done by external providers (86%). France performs one of the highest shares (69%) of web design outsourcing, and website content management systems are most prevalent in France (34.4%). French assessments of e-business impacts on internal processes were below average. France reported one of the lowest levels of change of business conduction due to e-business. The level of satisfaction with e-business was below average. The intention to increase e-business expenditures was slightly below average (24%). France has a high percentage of interviewees stating that e-business does not play a role in their company today and will not do so in the future (63%).
- **Germany** has the lowest share of users of analogue dial-up modems (4%) and the highest share of ISDN users (65%). Germany has one of the lowest shares of firms with a bandwidth larger than 10Mbit/s. Remote computer system access opportunities are above average. Germany has the lowest levels in in-house training (37%) and usage of working time for learning (58%), as well as

the second lowest levels in general training support (76%) and training by third parties (45%). German real estate firms are about average in their assessment of importance of various ways of acquiring ICT skills. Germany revealed one of the lowest levels of IT staff recruitment activities. In internal e-business, Germany tends to be below the sample average but has a high share of firms tracking working hours. Website maintenance and updating was highest in Germany (63%), but website content management systems are quite rare in German real estate firms (12%). German interviewees very often stated "some" impact of e-business on internal processes. German real estate firms reported the highest levels of change of business conduction due to e-business. German real estate firms reported the highest percentage of fairly high satisfaction (86%) with e-business. German real estate firms revealed the smallest inclination to increase IT expenditures in the next twelve months (19%) but the largest to rather decrease them (5%). Germany has one of the highest shares of interviewees stating that e-business does not play a role in their enterprise and will not do so in the future.

- **Italy:** Italian real estate firms are average in using all categories of Internet access technology. Italy has one of the highest shares of firms with a bandwidth larger than 10 Mbit/s. The level of remote access possibilities and plans is lowest of all countries. Italy has the lowest levels of general support (70%) and training by third parties (41%) and has also low figures in the other two types of training offers. In ways of learning IT skills, Italian interviewees were above average in their assessments of "very important" and below average in "fairly important". Activities to recruit IT staff were slightly below average and reported to be quite difficult. Italy has a level of e-learning slightly above average but is average or below in other internal e-business applications. External web hosting is second lowest in Italy (58%). Italy performs the lowest level (58%) of web design outsourcing. As regards e-business impacts on internal processes, Italians revealed the highest levels of answers of "significant". Italian real estate firms were those with the largest share stating to increase e-business expenditures within the next twelve months (42%). Italian interviewees most often said that e-business "constitutes a significant part today" (20%).
- **Portugal** has the lowest level of DSL users (9%) and is above average in analogue dial-up modems. Portugal has one of the highest shares of firms with a bandwidth larger than 10 Mbit/s (9%) but also the highest share of firms with Internet access less than 2 MBit/s (84%). Remote computer system access opportunities are above average. Portugal is lowest in in-house training (38%), slightly below average in general support (78%) and third-party training (49%), but quite high in usage of working time for learning (76%). Portugal has the highest shares of answers of "very important" for on-the-job learning (73%), formal training schemes (51%) and self-learning activities (63%). Activities as well as difficulties to recruit IT staff were highest in Portugal. Portugal has the lowest level of tracking working hours (4%) but is well above average in support of human resources management (18%) and e-learning (19%). Portuguese real estate firms have the second highest inclination to have web hosting done by external providers (72%). Website content management systems are quite prevalent in Portugal (30%). Portuguese assessments of e-business impacts on internal processes were below average. Portugal reported one of the lowest levels of change of business conduction due to e-business. The level of overall satisfaction with e-business was smallest in Portugal. The intention to increase IT spending were above average (33%). In Portugal, only 1% of the interviewees attributed e-business a significant part today, but 43% for the future.
- **United Kingdom:** UK real estate firms have the highest percentage of analogue dial-up modems (37%) and the second-highest level of "other fixed connections" (20%). The UK is around average in all bandwidth classes. Remote computer system access opportunities are above average. UK firms are the leaders in in-house training (57%) and also very high in the other categories of ICT training. The UK is about average in formal training schemes and self-learning activities, and on-the-job learning revealed a relatively high level of answers of "very important" (66%). Activities as well as difficulties to recruit IT staff were above average in the UK. UK firms have the highest level of automated travel reimbursements (11%) and are below average only in tracking working hours (8%). Website maintenance and updating was one of the lowest in the UK (51%). UK interviewees

tended towards the average in their assessments of e-business impacts on internal processes. UK firms reported the second highest levels of change of business conduction due to e-business. The intention to increase IT spending were above average in the UK (35%). UK real estate firms performed the highest level of answers of e-business “will constitute a significant part in the future” (46%)

Survey findings by company size class: SMEs lag behind, but not always

The survey findings broken down by company size classes – enterprises with 0-49, 50-249 and 250+ employees – reveal that SMEs generally lag behind large companies in e-business use, but not in all respects. In this respect the analysis of further survey findings confirms what has already been stated in the first report on e-business in the real estate sector. Large firms reported higher shares of high bandwidth, remote access to the computer system, internal e-business processes, and e-business expenditure increase. However, medium-sized firms perform particularly good in online marketing and sales. More detailed findings involve:

- **ICT infrastructure:** Large companies have a clear preference for “other fixed connections”, while the level of ISDN is lowest of the three size classes. Medium-sized enterprises have the highest level of DSL and the lowest of analogue dial-up modems. Small companies are predominantly equipped with ISDN. A high bandwidth is a clear domain of large companies. Furthermore, large companies have a much higher share of remote access opportunity than SMEs. Remote wireless access is also much higher among large firms. However, the plans to introduce remote access are higher among SMEs.
- **Skills development and recruiting:** Large firms offer significantly more in-house computer or IT training as well as third-party training than SMEs. As regards general training support, large firms are on the same level as medium-sized firms, while small firms are behind. Medium-sized enterprises reveal the highest level of usage of working time for learning activities. As regards ways of learning IT skills, the largest differences between the three size classes were found for self-learning activities which is more important in SMEs than in large firms. The majority of large companies recruited or tried to recruit IT staff, whereas the recruitment levels in SMEs were much lower. Accordingly, recruitment difficulties were reported to be highest in large companies and lowest in small companies.
- **Internal applications:** Large real estate firms clearly outperform SMEs in internal e-business processes. Except in e-learning, large firms have a higher percentage than medium-sized firms, and medium-sized firms have a higher share than small firms. As regards e-learning, the levels are very similar.
- **Marketing and sales:** Medium-sized firms appear to be more advanced than large and small firms in several respects of online selling: processing of online orders by integrating them into the back end system, creating an automatic e-mail, and the triggering of an automatically driven business process. SSL technology is more prevalent among medium-sized firms than in large and small firms. After-sales services can be found more often in medium-sized enterprises than in large and small firms. The good performance of medium-sized enterprises in online orders processing may be due to higher flexibility compared to large firms. As regards distribution channels, the own website is a more important distribution channel for SMEs than for large companies. On the other hand, electronic market places are more important for large firms. Extranets and EDI are also much more often used by large firms than by SMEs. The only sample companies practicing mobile commerce belong the smallest size class. The largest share of small firms is focused on the local market, while the majority of the medium-sized firms and large ones are oriented towards the national market.
- **E-business impacts:** Small firms reported the highest levels of change of internal processes in all cases. As regards the relationship to suppliers, the reported changes are as high as in large firms. The levels of reported change are similar among medium-sized and large firms, with medium-sized firms stating higher levels of significant impact and higher percentages of some impact in

large firms. Moreover, SMEs reported much more change of business conduction through e-business than large firms. The level of very high satisfaction with e-business is largest in large companies. The level of fairly high satisfaction is very similar in the three size classes. Disappointment is most significant in medium-sized enterprises.

- **Prospects for the future:** Large firms show a much higher intention to increase their e-business expenditures than SMEs.

3.2 Economic implications

The barrier perspective: limited impact of e-business on real estate value chains and business practices

In the opinion of many serious and important market players, telecommunication, Internet and e-business will neither have a remarkable impact on real estate business and real estate savings nor on supply and demand. Real estate activities may be considered as a typical sector in which – due to the nature of the products and services offered – particular parts of the ideal e-business sequence are of limited practical importance. Key aspects of traditional business communication can possibly never be completely substituted by ICT.

Since the typically real estate is an illiquid, inflexible asset available only in large lot sizes, it is not particularly suitable for online selling. The large size of commercial property transactions (e.g., for shopping centres and office buildings) but also for private homes may act as an inhibitor to online transactions. It is not possible today and difficult to imagine for the future how a majority of prospective purchasers could do without going to visit the property in question before purchase. Legal requirements such as concluding a building transaction by a notary can hardly be fulfilled through the Internet. Verification of information and high level security would be needed to prevent fraudulent acts. Though digital signature laws have been enacted in EU Member States, it will take time before such electronic signatures become common enough to encourage more real estate transactions online.

The opportunity perspective: notable impact of e-business on real estate services

The pervasive view within real estate that the industry is all about “bricks and mortar” may be simplistic, ignoring the fact that buildings are complex systems that deliver economic capacity to their occupiers and that the majority of the industry is about the delivery of building-related services rather than buildings. The opinion that telecommunications, Internet and e-business will not have an impact on the industry may discount the lessons of history, and apparently the obvious and demonstrable impacts that have already taken place. The denial of an impact upon supply and demand seems illogical given the apparent recognition of the potential of e-business to improve industry processes. It seems axiomatic that if real estate processes can be improved by e-business, then so can many other industries – most of whom will be placing demands upon the real estate sector.

There is already anecdotal evidence of a dramatic impact on the volume of office space required by companies using these improved processes. Through better technology and online processes and “hot-desking”, British Airways, for example, were able to increase the occupational density of space at their Waterside headquarters by up to 80%. The building uses the “club” concept of office configuration - allowing 180 people to be accredited to a floor plate that, with a conventional one-desk-per-person policy, would have accommodated only 100 staff. Extrapolation using conventional measures of density shows that this reduced demand by some 5,000 square metres.⁸ The competitive edge that this type of change gives may ensure that an impact upon demand and thereby supply will be almost inevitable.

An examination of real estate service companies uncovers a whole raft of service products that are eminently suitable to be sold online, such as valuation services, investment appraisal, transfer of

⁸ Example provided by Robert Thompson, *e-Business W@tch* sector expert for real estate.

ownership where securitised, lease management, local taxation services. This is the area where changes are happening in the few, more advanced companies. As Johnson and Redman in an article on e-commerce in real estate conclude, "it is quite conceivable that in the future some real estate transactions from the property search to the final closing of a contractual agreement can be considered to fall within the realm of pure electronic commerce".

While selling and purchasing online may be of limited importance in real estate, internal processes within an establishment and between establishments has much more opportunities. There is seen to be enormous potential for accelerated use of e-business techniques in the real-estate sector, particularly to improve the transparency of the market, support fluidity in transactions between tenants, housing providers and their suppliers, and improve service for tenants and owners.

Opportunities and threats for SMEs and new businesses

E-business offers particular opportunities for small and medium-sized enterprises. Since size is not apparent on the Internet, SMEs can potentially compete on a level footing with firms of any size. Companies can deliver information-rich content to a much wider audience at marginal cost thus expanding their potential client base. SMEs appear to take advantage of this opportunity: As the survey findings reveal, the share of small enterprises reporting positive impacts of online sales on number of customers and sales area is similar to large companies and is even higher as regards sales volume. The particularly good performance of medium-sized firms in online orders processing, SSL use and after-sales services also shows that many SMEs have reacted to the challenges of e-business more comprehensive than large firms.

Since the real estate sector is characterised by a large share of small companies, entry barriers are relatively low. New companies with special e-business practices may challenge the traditional market. The increasing number of real estate firms in the EU points in this direction.

However, the Internet also endangers the traditional domain of SMEs. Small companies typically survive through practices in geographic or specialist niches. The aspatial nature of the Internet facilitates greater competition in these niche areas. Furthermore big firms might gain more importance in real estate by using their financial power. Investing in e-business technologies can be very expensive, putting SMEs at a disadvantage.

3.3 Policy issues

Desk research and empirical findings of the *e-Business W@tch* survey allow the formulation of policy implications for improved e-business application in the EU real estate sector. The following set of (possible) implications arising from the impact of electronic business on the insurance sector are likely to be important for the future development and should be considered as policy already relevant at this point.

Developing secure and affordable technical applications can foster e-business uptake in real estate

The real estate sector has a particular need for secure transaction processes due to the high value of the objects and the large amounts of money transferred in the case of sales. In sector comparison, complete agreement to concerns about data protection and security are the second largest of all 15 sectors surveyed. Furthermore, costs of available technology for online procurement are regarded as very high in sector comparison. While it is unclear if this judgement of real estate interviewees is due to reservations against e-business technology in general or to the high percentage of SMEs which have relatively low investment power, the development of special transaction modules for the real estate sector could further accelerate e-commerce use in real estate. This is mainly an issue for the software industry. However, real estate associations and public entities can form public-private partnerships to conduct pilot projects for testing, improving and spreading e-business technology in real estate.

Quality of applications could be improved to increase customer satisfaction

A lack of consumer interest in using online real estate services or even concluding contracts online may well be a consequence of poor Internet presentation and service. Trust in Internet products could be increased by hallmarks of good quality. Website functions need to be easily manageable, without hang-ups and without losing data entered when moving back to previous sites. Special website tools to help find the right product could meet the customers' need for information and consulting. The finding that only 10% of real estate enterprises reported to having changed their offers of products and services in the course of e-business application shows that opportunities of more adequate electronic presentation remain unexploited. Furthermore, the use of electronic Customer Relationship Management tools, reported to be used in only 6% of the real estate enterprises which is the second lowest level of all sectors – could become more common and further expanded.

Generation and transfer of specialised knowledge can help real estate to catch up with other sectors

Research and education organisations could contribute more to e-business penetration in the real estate sector. Research for this report suggests that in public research there is a lack of experts for e-business in real estate. As Johnson and Redman formulated in an article on e-commerce in real estate, “the research literature (..) has yet to catch up with systematically investigating, analysing, assessing, and predicting the present and future impacts of electronic commerce in the real estate industry”. This implies a lack of a knowledge base for all those in enterprises, associations and public administration who deal with e-business in real estate.

Student education as well as political and business consulting in the field of real estate may benefit from promoting real estate e-business in university research and teaching. Experts from private and public real estate firms, for example alumni, could be invited as e-business lecturers in their sector. Networks of excellence between public research institutions and real estate firms could be established and promoted in order to transfer knowledge about technology and business practice.⁹ An example is the Finish Institute for Real Estate Economics, founded in 1993 by the Turku School of Economics, the Finnish Real Estate Federation and the Real Estate Association of Helsinki.¹⁰

The fostering of entrepreneurship and innovation is one of the goals with highest priority on the European Commission's agenda. This objective should also be pursued in the real estate business. For example, entrepreneurial networks of universities, companies, associations and local development agencies can assist graduates in starting an own real estate business. An example is the “GO!” SPRING¹¹ project at the Ruhr-University Bochum in Germany, promoting start-ups from universities with a particular focus on facility management firms. One of the supporting companies produces software for construction engineering.

Encouraging SMEs to apply e-business is still advisable

The finding that small and medium-sized real estate enterprises lag behind large companies in many respects but perform better in some subjects suggests that no “urgent action” measures are necessary. However, the finding that SMEs are slightly less satisfied with e-business outcomes and that SMEs' inclination to increase ICT expenditures is much smaller than in large firms suggests that encouraging measures are useful. SMEs may benefit from the communication of good e-business practice by political bodies, chambers of commerce and real estate associations. SMEs not yet applying e-business practices may learn from peer examples how to benefit from selling and procuring online as well as integrating e-business into internal processes.

⁹ This implication is similar to a statement formulated in the reports on the insurance sector. Both sectors have similarities with regard to being quite conservative and not taking up new technologies very quickly.

¹⁰ See <http://www.kti.fi>.

¹¹ See <http://www.go-spring.de>.

Country-specific activities are advisable in almost all sample countries

The differences between countries in e-business use in real estate revealed in the first *e-Business W@tch* survey suggest policies targeted at specific countries. In particular, Portuguese real estate companies – which reported one of the lowest levels of change of business conduction due to e-business, and only 1% of the interviewees attributed e-business a significant part today – could benefit from particular measures. However, to some extent the level of e-business activity in French, German, Italian and British real estate companies is low, too, and Finnish real estate enterprises perform lower shares of ICT use than the total of enterprises. Thus specific promotion measures in these countries may be advisable. The situation in Denmark appears to be quite satisfactory.

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Annex: Methodology of the e-Business Survey 2002

Background

Most of the data presented in this report are derived from the European e-Business Survey 2002, a cornerstone of the monitoring activities of the *e-Business W@tch*. In total, 9264 telephone interviews with decision makers in European enterprises in all EU Member States were conducted during June and July 2002. For the construction of the questionnaire and for underlying definitions, OECD recommendations were taken into account.

Field work

The field work of the survey was carried out by INRA Germany in co-operation with its partner organisations on behalf of the *e-Business W@tch*:

Country	Organisation	Country	Organisation
Austria	Spectra Marktforschung: Brucknerstr. 3-5/4, 4020 Linz	Italy	INRA Demoskopea S.p.A., Via Rubicone 41, 00199 Roma
Belgium	INRA Belgium, Avenue de la Couronne 159-165, 1050 Brussels	Luxembourg	ILReS Market Research, 46, Rue di Cimentière, L-1338 Luxembourg
Denmark	Gallup TNS Denmark, Masnedogade 22-26, 2100 Copenhagen	Netherlands	Blauw Contactcenter, Conradstraat 18, 3013 AP Rotterdam
Germany	INRA Deutschland GmbH, Papenkamp 2-6, 23879 Mölln	Portugal	Metris GfK, Av. Eng. Arantes e Oliveira 3-2, 1900-221 Lisboa
Finland	Taloustutkimus Oy, Lemuntie 9, 00510 Helsinki	Spain	INRA España S.A., C. Alberto Aguilera, 7-5, 28015 Madrid
France	CSA TMO, 22 rue du 4 Septembre, 75065 Paris Cedex 02	Sweden	GfK Sverige, Box 401, 221 00 Lund
Greece	MEMRB – K.E.M.E, 24 Ippodamou St., 11635 Athens	UK	Continental Research, 132-140 Goswell Road, EC1V 7DY London
Ireland	Lansdowne Market Research, 49 St., Stephens Green, Dublin 2		

Interview method

The field work was carried out in June and July 2002 using computer-aided telephone interview (CATI) technology. The decision maker in the enterprise targeted by the survey was normally the person responsible for ICT within the company, typically the IT manager. Alternatively, particularly in small enterprises which may not have a separate IT unit, the managing director or owner was interviewed.

Population coverage and sampling

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

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

The sample drawn was a random sample of companies from the respective sector population in each Member State where the respective sector was to be surveyed with the objective to fulfil quota with respect to company size class. Target quota were to include a share of at least 10% of large companies (250+ employees) per country-sector cell and at least 30% of medium sized enterprises (50-249 employees).

Samples were drawn locally by the INRA partner organisations based on the acknowledged business directories and databases (cf. table next page).

Population coverage of the e-Business Survey (2002)

No.	NACE Rev. 1 Codes (Section – Division/Group)		Sector Name
01	D	15, 16	Manufacture of food products, beverages and tobacco
02	D / O	22, 92.1, 92.2	Publishing, printing, reproduction of recorded media, audiovisual services
03	D	24, 25	Manufacture of chemicals and chemical products
04	D	28	Manufacture of metal products
05	D	29 (except 29.6, 29.7)	Manufacture of machinery and equipment
06	D	30, 31 (except 31.3 - 31.6), 32	Manufacture of Electrical machinery and electronics
07	D	34, 35	Manufacture of transport equipment
08	G	52.11, 52.12, 52.4	Retail
09	H / I / O	55.1, 55.2, 62.1, 63.3, 92.33, 92.52, 92.53	Tourism
10	J	65.12, 65.2	Credit institutions, investment firms and leasing enterprises
11	J	66	Insurance and pension funding services
12	K	70	Real estate activities
13	K	74	Business services
14	I / K	64.2, 72	Telecommunications and computer-related services
15	N	85.11, 85.12, 85.3	Health and social services

Country	Directory / Database	Country	Directory / Database
Austria	Herold BUSINESS MARKETING database	Italy	Dun & Bradstreet
Belgium	SPECTRON database by Vicindo	Luxembourg	Répertoire des entreprises luxembourgeoises by STATEC (the official list of the National Statistic Administration).
Denmark	KOB (Købmandsstandens Oplysnings Bureau)	Netherlands	MarktSelect
Germany	Heins und Partner Business Pool	Portugal	Business directory by INE (the National Statistics Institute)
Finland	Blue Book - Salesleads database by the Helsinki Media Company Oy (Sanoma Magazines Finland)	Spain	Dun & Bradstreet
France	IDATA, based on "INSEE Siren file" (the National Institute of Statistics) and other directories	Sweden	Swedish Post Adress Register (PAR)
Greece	ICAP directory (the major database for Greece)	UK	Dun & Bradstreet
Ireland	Bill Moss / Dun & Bradstreet		

In total, 9264 interviews were carried out. The following table shows the breakdown by country and the average interview length:

Country	No. of interviews	Average length	Country	No. of interviews	Average length
Austria	308	17.0 min.	Italy	1517	22.5 min.
Belgium	300	18.2 min.	Luxembourg	102	17.4 min.
Denmark	304	20.2 min.	Netherlands	500	17.2 min.
Germany	1500	18.8 min.	Portugal	300	23.0 min.
Finland	308	20.6 min.	Spain	502	18.4 min.
France	1362	17.2 min.	Sweden	260	19.8 min.
Greece	308	16.5 min.	UK	1538	16.5 min.
Ireland	155	20.1 min.	TOTAL	9264	~ 18 min.

Problems encountered

No major problems were reported by the fieldwork organisations with respect to interviewing (e.g. comprehensibility of the questionnaire, logical structure). A statement from the institute that carried out the survey in the UK summarises this general assessment very well: "On the whole, the fieldwork went relatively smoothly. The questionnaire was logically structured and flowed naturally. Most problems stemmed from the difficulties of conducting research projects among ICT decision makers in general rather than from any specific flaws in design of this project itself. Dedicated ICT professionals are heavily researched and therefore securing their participation can be difficult. This is a particular problem in larger companies."

In some countries, it was not possible to accomplish the number of interviews envisaged, mainly in those cases where the total population of enterprises was relatively small (e.g. in the insurance sector in smaller countries). In some cases, the objective of including a share of 10% of large companies could not be accomplished; if possible, these were then replaced by interviews with SMEs.

An issue – which was known in advance but is unavoidable in telephone interviews – is that it is not always easy to find the right target person. Field work organizations reported that sometimes a data processing manager is not very aware of the consequences of e-business on the whole of the company, on the personnel level and on the financial level. On the other hand, the general manager may not always be aware of the implementation status and technical consequences.

Tabulations

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

1. An activity breakdown of the population of enterprises into 15 sectors. This breakdown is based on the aggregate of four countries (D, F, I, UK), as in these countries all 15 sectors were included in the survey and therefore comparability of the sample is given. These four countries represent more than 60% of the market volume in any of the 15 sectors and in most sectors actually more than 70%.
2. A size-class breakdown of the population of enterprises into three categories: small enterprises (including micro-enterprises, i.e. enterprises with 0-49 employees), medium sized enterprises (50-249 employees) and large enterprises (250+ employees).

A breakdown of the population by EU Member States is also available, but it is restricted to four countries (D, F, I, UK) for the same reason as explained in (1.) above. This implies that two different kinds of totals were calculated: (i) an EU-4 total consisting of the results from Germany, France, Italy and the UK and (ii) a sector total consisting of all countries included in the survey of a particular sector. For reasons of comparability and consistency, tables comparing sectors build on the EU-4 totals. Sector totals are composed of 6-8 countries per sector.

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

Weighting principles

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

- Values that are reported as weighted by employment figures should be read as "enterprises comprising x% of employees". To give an example: The indicator "*percentage of companies selling online*" is – if weighted by employment – defined as "*companies comprising x% of employees sell online*". The reason for using employment weighting is that there are very many more micro enterprises than non-micro enterprises. The unweighted figure would effectively represent mainly the smallest sizes of firm.
- Values that are reported as enterprise weighted figures are to be read as "x% of enterprises", reflecting the number of enterprises as legal entities but not their relative economic importance in terms of employment.

Weighting was based on the latest available universe figures by Eurostat. Missing or undisclosed universe data had to be imputed. The imputation procedures depended on auxiliary or proxy data availability, taking into account where available information about higher industry aggregations, nearest neighbour data, turnover-employment correlation and secondary sources other than Eurostat and allowing for the constraint of predetermined ranges such that imputed data had to be contingent with published sectoral, national and European universe totals as well as for final plausibility checks for every single imputed data item. The weighting cells correspond to the data reporting pattern used as regards industries and employment size-classes. Uniform expansion factors are applied to enterprises within one of the three size-classes per industry per country. As for data that refer to a base other than the universe of all enterprises (e.g. indicators appropriately reported for online selling enterprises only), expansion factors are adjusted to the different shares of observations per cell that build the computation base.

Variables - indicators

The set of ICT and e-business indicators for which data were collected in this survey can be structured into five main modules:

- Module A: ICT infrastructure and e-skills development in the company
- Module B: E-commerce and e-business usage
- Module C: Barriers to e-commerce
- Module D: Impact of selling and procuring online
- Module E: Impact of and satisfaction with electronic business

The choice of indicators includes a basic set of widely accepted measures for e-commerce and e-business (as used in related surveys on e-commerce and e-business e.g. by Eurostat), but also introduces a few innovative indicators which have a pilot character and are not yet widely tested. The full list of variables which was the basis for preparing the questionnaire can be downloaded (as a spreadsheet) from the *e-Business W@tch* website at its "database" section (http://www.ebusiness-watch.org/marketwatch/database/survey_info.htm)