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Knowledge Economy

- The ICT sector employed over 83,400 persons in 2004.
- Almost half (48.7%) of Irish households connected to the internet with home computers in February 2006. Just 13% of all households had a broadband connection.
- Nearly two thirds of businesses with 10 or more employees had a website in 2006.
- A mobile penetration rate of 103% was recorded in the second quarter of 2006.
- Just over half (52%) of enterprises with 10 or more employees reported innovation activity over the period 2002 to 2004.
- Total expenditure on Research and Development in Ireland reached €2bn in 2005.

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Introduction

This chapter presents information on the knowledge economy in Ireland. It contains statistics on the information society and telecommunications as well as research and development (R&D) and innovation. The results have been obtained from a number of CSO enterprise and household surveys, Forfás surveys on R&D and innovation and administrative data from the Commission for Communications Regulation (ComReg) on telecommunications and broadcasting.

ICT sector

The ICT sector employed over 83,400 people in 2004, which represented 8% of total employment in industry and services. The ICT manufacturing sector employed 30,000 persons, while 53,400 people were employed in ICT services accounting for over 7% of total services employment.

The ICT sector accounted for just 6% of the total number of enterprises and 8% of total employment. However, it contributed 20% of total turnover in industry and services. Total turnover in the ICT sector was almost €53bn in 2004, of which 61% was in manufacturing and 39% in services. Value added in the ICT sector, at €14.6bn, accounted for 16% of total value added in industry and services. See table 19.1.

Use of ICT by households

In February 2006, an estimated 867,500 households (or 58.5% of all households) had a home computer. This was an increase of 69,800 households since June 2005, when 797,700 households had a home computer. Internet access also increased over this period, with 722,200 households (or 48.7%) having a computer connected to the internet in February 2006, compared with 655,000 in June 2005. In June 2004 just 3% of households had a broadband connection. This increased to 13% by February 2006. See table 19.2.

The most popular activity on the internet related to *Information search and online services*, eg finding information about goods and services, travel and accommodation. Next most popular is *Communication*, e.g. sending and receiving e-mails. See table 19.3.

In the twelve months prior to February 2006, 709,200 persons had ordered goods or services from the internet for private use. This compares with 580,700 in 2005. The most popular type of goods and services ordered on the internet were *Travel and holiday accommodation* (450,100), *Tickets for events* (273,600), and *Books/magazines/newspapers/e-learning material* (223,800). See table 19.4.

Use of ICT by enterprises (with 10 or more employees)

Virtually all enterprises use computers in one way or another today: 99% in manufacturing, 95% in construction and 96% in services. The majority also use e-mail and the internet, while 64% of all enterprises reported that they have a website or homepage.

Some 45% of enterprises had dedicated IT systems to manage the placing and receipt of orders in 2006. See table 19.5.

In 2006, 77% of enterprises said they had downloaded forms from a public authority website, while 56% had returned completed forms online. See table 19.6.

In the manufacturing sector, a third of enterprises had e-commerce sales, compared with 29% in services. Sales by e-commerce accounted for almost a quarter of total turnover in the manufacturing sector in 2006. EDI (Electronic Data Interchange) accounted for more than half of these sales. In the services sector sales via e-commerce accounted for 13% of turnover.

The results show that 59% of all businesses purchased some goods using e-commerce. The percentage of total purchases completed in this way is small at 10%. See table 19.7.

Telecommunications

There were just over two million fixed access paths in the second quarter of 2006. The total number of mobile subscribers in the same quarter was almost 4.4 million, with pre-paid subscribers making up three quarters of the total. The mobile penetration for Ireland increased from 93% in the second quarter of 2005 to 103% in the same quarter of 2006.

In the second quarter of 2005 just under 60% of pay television subscribers had a digital television via satellite or digital cable. By the second quarter of 2006 this had increased to almost 7 in every 10 pay TV subscribers. See table 19.8.

Innovation and R&D activity

Just over half (52%) of all enterprises with 10 or more employees engaged in innovative activities over the period 2002 to 2004. Almost two in every five firms indicated that they had introduced a new good or service, or significantly enhanced a good or service with respect to its capabilities. Just 23% of businesses introduced products that were new to the market, while 30% introduced products that were new to the firm but not the market. Over the same period 43% of enterprises introduced a new or significantly improved production process, distribution method, or support activity for goods or services. See table 19.9.

The total gross expenditure on R&D was over €2bn in 2005. Almost two thirds of this expenditure was accounted for by business enterprises. The higher education sector contributed 27% while the government sector contributed a further 7% of total expenditure on R&D. See table 19.10.

In 2005, almost 28,200 research personnel were employed in Ireland. Similar shares were employed in the business sector (48%) and the higher education sector (47%) while the remainder were employed in the public sector. Two thirds of total research personnel were male. See table 19.11.

R&D spending by business enterprises was €1.3bn in 2005. Irish owned businesses, represented 75% of all businesses, contributed just 23% of the total expenditure. Foreign owned firms contributed 77% of the total expenditure in 2005, compared with 70% in 2003. See table 19.12.

Technical Notes

Table 19.1

Table 19.1 contains data on the key economic variables for the ICT sector from the CSO's Census of Industrial Production and Annual Services Inquiries over the period 2002 to 2004.

Tables 19.2-19.4

Information on the usage of ICT by households and individuals is obtained from the CSO's Quarterly National Household Survey (QNHS). A sample of around 6,000 QNHS households is used annually for the purposes of the ICT and e-commerce survey module. It includes questions relating to the household and questions asked of each person aged 16 to 74. The reference periods for the years presented are as follows: June 2004, June 2005 and February 2006.

Tables 19.5-19.7

The results presented in tables 19.5-19.7 are obtained from the CSO's survey of ICT and e-commerce usage in enterprises. The results from this annual survey cover manufacturing and selected services enterprises with 10 or more employees and construction sector enterprises with 20 or more employees.

Table 19.8

The information contained in Table 19.8 was provided by ComReg. Total fixed access paths include the total number of direct and indirect PSTN and ISDN access paths. Individual ISDN lines may have multiple access paths. Mobile penetration rates are based on active SIMS as a percentage of the total population.

Table 19.9

The Community Innovation Survey 2004 undertaken by Forfas measures innovation activity in businesses across Ireland over the period 2002 to 2004. The survey covers enterprises with 10 or more employees in the industrial and selected services sectors.

Tables 19.10-19.12

The information on the expenditure and numbers of personnel involved in research and development contained in tables 19.10 and 19.12 have been provided by Forfas. These results have been derived from Forfas' surveys of Business Expenditure on R&D, the Higher Education Sector and State Expenditure on Science and Technology and R&D.

Table 19.1 Contribution of the ICT sector to the Irish economy

	Unit	2002	2003	2004
ICT Manufacturing (A)				
Number of enterprises	No.	233	216	183
Persons engaged	No.	33,488	30,791	30,004
Turnover	€m	29,449	30,051	32,299
Gross value added	€m	5,700	6,038	6,779
ICT Services (B)				
Number of enterprises	No.	3,900	4,226	5,101
Persons engaged	No.	48,572	49,307	53,415
Turnover	€m	19,609	18,851	20,530
Gross value added	€m	6,483	6,913	7,771
ICT Total (A + B)				
Number of enterprises	No.	4,133	4,442	5,284
Persons engaged	No.	82,060	80,098	83,419
Turnover	€m	49,058	48,902	52,829
Gross value added	€m	12,183	12,951	14,550
Total ICT as a % of Total Industry and Services				
Number of enterprises	%	5	5	6
Persons engaged	%	9	8	8
Turnover	%	22	21	20
Gross value added	%	17	17	16

Source: CSO

Table 19.2 Main trends in household ICT use

	2004	2005	2006
All households ('000)	1,405.9	1,453.9	1,483.8
Households with home computers ('000)	649.4	797.7	867.5
% of all households	46.2	54.9	58.5
Households with computers connected to internet ('000)	537.0	655.0	722.2
% of all households	38.2	45.1	48.7
% of all households with home computers	82.7	82.1	83.3
Type of internet connection			
Modem/ISDN ('000)	503.6	552.1	523.7
Broadband ('000)	40.4	106.9	193.5
Other/don't know ('000)	13.9	48.1	35.1

Source: CSO

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Table 19.3 Activities on the internet in the previous 3 months

'000

	2004	2005	2006
Communication	815.3	944.5	1,142.0
Sending and receiving e-mails	804.5	934.6	1,132.3
Telephoning/video conferencing	57.9	87.6	145.1
Other (use of chat sites etc.)	72.9	83.4	155.4
Information search and on-line services	821.9	1,010.5	1,205.7
Finding information about goods and services	646.5	877.2	1,071.3
Travel and accommodation	531.7	733.9	938.2
Web radio/web television	73.8	118.0	222.2
Playing/downloading games, images and or music	136.1	181.7	272.5
Downloading software	–	138.8	231.0
Reading/downloading newspapers or magazines	156.7	123.8	192.4
Looking for a job/sending job applications	96.2	71.0	147.5
Seeking health related information	–	–	200.6
Selling or banking	–	396.6	559.2
Internet banking	–	387.3	530.2
Selling goods or services	–	22.7	103.1
Interaction with public authorities	417.8	535.4	658.6
Obtaining information from web sites	336.7	439.0	545.6
Downloading official forms	257.1	357.2	487.0
Sending completed forms	188.1	280.0	366.3
Training and education	276.2	266.1	325.2
Formalised educational activities	192.0	180.2	225.5
Post educational courses	64.7	91.1	99.4
Other employment-related educational courses	106.2	95.3	137.1
All persons who used the internet in previous 3 months	980.1	1,120.2	1,292.9

Source: CSO

Table 19.4 Purchases on the internet

'000

Types of goods and services ordered in last 12 months	2004	2005	2006
Food/groceries	17.1	35.5	50.8
Household goods	–	40.8	57.5
Films/music	88.5	158.1	221.0
Books/magazines/newspapers/e-learning material	95.2	135.2	223.8
Clothes/sports goods	21.6	52.5	92.3
Computer software	17.9	60.6	148.2
Computer hardware	18.6	26.5	66.2
Electronic equipment	18.4	40.5	79.4
Share purchases/financial services/insurance	5.9	14.6	35.1
Travel and holiday accommodation	209.4	317.6	450.1
Tickets for events	63.7	157.0	273.6
Lotteries/betting	2.9	9.1	15.1
Other	39.2	28.3	34.6
All persons who have purchased on the internet in the last 12 months	485.5	580.7	709.2

Source: CSO

Table 19.5 Main results of enterprise ICT survey, as percentage of all enterprises - March 2006

	Manufacturing sectors	Construction sector	Selected services sectors	Total
Enterprises with 10 or more persons engaged	2,759	736	8,724	12,219
General information about ICT systems	%	%	%	%
Using a computer	99	95	96	97
Using e-mail	96	92	93	93
Using intranet	47	38	47	46
Using LAN	62	51	62	61
Using extranet	17	6	19	18
Using dedicated ICT systems for managing orders	49	22	46	45
Having a written ICT strategy	20	10	19	19
Use of the internet				
Using the internet	97	93	93	94
Having a website or homepage	66	47	64	64
Type of external connection to the Internet				
Modem	25	21	26	25
ISDN	32	28	31	31
Broadband	61	54	61	61
Wireless connection	12	16	15	14

Source: CSO

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Table 19.6 Levels of interaction with public authorities via the internet, as percentage of all enterprises - March 2006

	Manufacturing sectors	Construction sector	Selected services sectors	Total
Enterprises with 10 or more persons engaged (No.)	2,759	736	8,724	12,219
%	100	100	100	100
Interaction with public authorities via internet				
For obtaining information	78	75	74	75
For obtaining forms	80	77	76	77
For returning filled-in forms	58	54	56	56
For full electronic case handling	44	36	47	46
Submit proposal by electronic tender system	19	32	20	21

Source: CSO

Table 19.7 Purchases and sales via e-commerce, 2006

	Manufacturing sectors	Construction sector	Selected services sectors	Total
Use of e-commerce for purchases				
By internet (as % of total enterprises)	60	42	56	56
By EDI (%)	7	2	11	9
By internet or EDI (%)	61	42	60	59
Total value of purchases (€m)	73,626	3,945	78,870	156,441
Percentage of purchases by e-commerce				
Internet (as % of total purchases)	4	1	5	4
EDI (%)	6	0	5	5
Internet or EDI (%)	10	1	10	10
Use of e-commerce for sales				
By internet (as % of total enterprises)	25	6	24	23
By EDI (%)	13	0	7	8
By Internet or EDI (%)	33	6	29	28
Total value of turnover (€m)	113,798	13,113	112,976	239,887
Percentage of sales by e-commerce				
Internet (as % of total turnover)	9	0	9	9
EDI (%)	13	0	4	8
Internet or EDI (%)	22	0	13	17

Source: CSO

Table 19.8 Selected telecommunications and broadcasting data

	Unit	Q2 2004	Q2 2005	Q2 2006
Fixed				
Total fixed access paths	Number	2,024,000	2,047,000	2,039,000
Mobile				
Post-paid subscribers	Number	920,000	965,000	1,055,000
Pre-paid subscribers	Number	2,578,000	2,866,000	3,317,000
Total Mobile	Number	3,499,000	3,831,000	4,372,000
Mobile penetration rates	%	87	93	103
Television				
Number of subscribers by platform	Number	849,000	917,000	997,000
<i>of which</i>				
Analogue cable	Number	400,000	380,000	319,000
Satellite	Number	323,000	363,000	427,000
Digital cable	Number	126,000	174,000	251,000

Source: Comreg

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Table 19.9 Innovation activity of enterprises as a percentage of all enterprises, 2004

	Unit	All enterprises
Enterprises with 10 or more persons engaged	No.	6,177
Enterprises with innovation activities	%	52
Type of innovation		
Product innovation	%	38
- new to firm	%	30
- new to market	%	23
Process innovation	%	43
- manufacturing	%	31
- logistics	%	19
- support	%	21

Source: Forfás Community Innovation Survey 2004

Table 19.10 Total intramural R&D expenditure (GERD) by sectors of performance

€m

	2003	2004	2005
All sectors	1,637	1,840	2,037
Business enterprise sector	1,105	1,210	1,329
Government sector	127	139	157
Higher education sector	404	492	550

Source: Forfas

Table 19.11 Research personnel (headcount) by sex and sector

	<i>Number</i>	
	2004	2005
Business	12,400	13,621
Female	2,790	3,079
Male	9,610	10,542
Higher education	12,175	13,300
Female	5,363	5,890
Male	6,812	7,410
Public sector	1,609	1,262
Female	560	474
Male	1,049	788
TOTAL	26,184	28,183
Female	8,713	9,443
Male	17,471	18,740

Source: Forfas

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Table 19.12 Research and development performance in the business sector

	Unit	2003	2005
Number of R&D active enterprises	Number	1,125	1,369
Irish owned	Number	873	1,026
Foreign owned	Number	252	343
Total spend on R&D	€m	1,105	1,329
Irish owned	€m	330	310
Foreign owned	€m	775	1,019

Source: Forfas - Research & Development Performance in the Business Sector Ireland 2005/6

