

# 18

## Knowledge Economy

- Three quarters (76%) of households where at least one member is aged between 16 and 74 had a computer in 2010.
- 62% of households where at least one member is aged between 16 and 74 had a broadband connection in 2010.
- Two thirds (67%) of people aged between 16 and 74 used the internet in the last three months in 2010.
- 92% of all enterprises with ten or more employees had a computer connected to the internet in 2010 and 68% had a website or homepage in 2010.
- 87% of all enterprises with ten or more employees had a broadband connection in 2010.
- Enterprises across all business sectors spent almost €1.9 billion on research & development in 2009.

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## Introduction

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

## Use of ICT by households

In the first quarter of 2010, an estimated 76% of households where at least one member was aged between 16 and 74 years of age, had a home computer compared with 65% in the same quarter in 2007. Internet access also increased over this period, with 71% of these households having a computer connected to the internet in the first quarter of 2010 compared with 57% in 2007. 62% of these households had a broadband internet connection in 2010 compared with only 31% of households in 2007. See table 18.1.

In 2010, the most popular activities on the internet for private purposes in the previous three months were *sending and receiving e-mails* and *finding information about goods and services* 58% and 57% respectively, of people aged between 16 and 74. See table 18.2.

In the twelve months prior to the first quarter of 2010, 36% of people aged between 16 and 74 had ordered goods or services from the internet for private use. The most popular type of goods and services ordered on the internet during this period were *Tickets for events* (22%). See table 18.3.

## Use of ICT by enterprises (with 10 or more persons engaged)

Virtually all enterprises used computers in one way or another in 2010: 99% in manufacturing, 97% in construction and 92% in services. The majority also use the internet, while 68% of all enterprises reported that they have a website or homepage and 32% of enterprises had a written IT strategy. See table 18.4.

In 2010, 82% of enterprises said they had downloaded forms from a public authority website, while 67% had returned completed forms online. See table 18.5.

In the manufacturing sector 31% of enterprises had e-commerce sales, compared with 20% in services. Sales by e-commerce accounted for 26% of total turnover in the manufacturing sector in 2010. In the services sector sales via e-commerce accounted for 26% of turnover.

The results show that 44% of all businesses purchased some goods using e-commerce. The percentage of total purchases completed in this way was 21%. See table 18.6.

## **Telecommunications**

There were just over 1.858 million fixed access paths in 2010. The total number of mobile subscribers in the same period (including HSDPA) was 5.273 million, with pre-paid subscribers making up 64% of the total. The mobile penetration rate for Ireland (including HSDPA) rose from 115.5% in 2009 to just under 118% in 2010. See table 18.7.

In the second quarter of 2009, 57% of pay television subscribers had a digital subscription via satellite or digital cable. By the second quarter of 2010 this had increased to just over 63% of pay TV subscribers. See table 18.8.

## **Research and development expenditure in 2009**

In 2009 almost €1.9bn was spent on research and development activities by enterprises across all business sectors in Ireland, as shown in table 18.9. Nearly 83% of all spending was on current expenditure while 17% was spent on capital expenditure. Enterprises spent €947m on labour costs, €595m on other current costs and €326m was spent on capital expenditure.

## **Research and development - staff headcount**

There were 15,773 persons engaged in research and development activities in Ireland in 2009. Table 18.10 indicates that in total there were 8,960 researchers of which 1,639 were engaged as PhD qualified researchers, 3,572 technicians and 3,241 support staff.

## **Number of active enterprises**

Table 18.11 shows there were 1,283 enterprises engaged in research and development activities in Ireland in 2009. More than two thirds of all enterprises spent less than €500,000 on research and development activities, over one fifth spent more than €500,000 and less than €2m while over 10% spent €2m or more.

## Technical Notes

### Table 18.1

Households refers to households where at least one member was aged between 16 and 74.

Some households may have more than one type of internet connection. Households that had a Broadband and a Modem/ISDN internet connection are included under Broadband only.

### Tables 18.2 and 18.3

Only persons aged between 16 and 74 were included in the survey.

### Tables 18.1-18.3

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 household ICT survey module. It includes questions relating to the household and questions asked of each person aged 16 to 74. The reference period is the first quarter of each year.

### Tables 18.4-18.6

The results presented in tables 18.4-18.6 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 persons engaged and construction sector enterprises with 20 or more persons engaged.

### Tables 18.7-18.8

The information contained in tables 18.7 and 18.8 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.

High Speed Downlink Packet Access (HSDPA) is a 3G (third generation) mobile telephony communications protocol in the High Speed Packet Access (HSPA) family, which allows networks based on Universal Mobile Telecommunications System (UMTS) to have higher data transfer speeds and capacity.

Data for 2009 has been revised and while the 2009 and 2010 data is comparable, no comparisons should be made with the previous years.

### Tables 18.9 – 18.11

Research and development activity in 2009

The Business Expenditure on Research and Development (BERD) Survey 2009/2010 is a survey of the research and development activities of enterprises in Ireland.

### **Definitions**

EDI = Electronic Data Interchange

Electronic exchange of forms, such as for orders, between geographically dispersed locations.

ISDN = Integrated Services Digital Network

Integrated Services Digital Network is the digital version of the old telephone system. ISDN offers many services such as private virtual networks, high-speed facsimile (fax), video-conferencing and most importantly, high speed communications.

LAN = Local Area Network

This relates to a company's computer network, usually within an office, building or closed geographical area.

**Table 18.1 Main trends in household ICT use**

	%			
	2007	2008	2009	2010
% of all households with home computers	65	70	73	76
<b>Households with computers connected to internet</b>				
% of all households	57	62	66	71
% of all households with home computers	87	89	91	93
<b>Type of internet connection as a % of all households</b>				
Modem/ISDN	25	19	12	8
Broadband	31	43	54	62
Other/don't know	1	1	1	2

Source: CSO

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**Table 18.2 Activities on the internet for private use by individuals aged 16-74 in the previous three months**

	%			
	2007	2008	2009	2010
<b>Communication</b>				
Sending and receiving e-mails	48	53	56	58
Telephoning over internet (VOIP) or video conferencing	n/a	n/a	14	17
Posting messages to chat site blog, news groups or online discussion forum, use of instant messaging	n/a	n/a	17	25
<b>Information search and on-line services</b>				
Finding information about goods and services	44	46	54	57
Travel and accommodation	39	41	44	47
Downloading software (other than game software)	10	13	14	12
Reading/downloading newspapers or magazines	10	17	19	21
Looking for a job/sending job applications	7	9	14	14
Seeking health-related information	12	19	24	27
Web radio/television	n/a	13	16	18
Playing/downloading games, images or music	n/a	n/a	19	20
Uploading self-created content	n/a	9	13	14
<b>Selling or banking</b>				
Internet banking	24	28	30	34
Selling goods or services	3	3	5	5
<b>Interaction with public authorities</b>				
Obtaining information from web sites	26	21	23	22
Downloading official forms	22	20	20	20
Sending completed forms	19	18	19	19
<b>Training and education</b>				
Looking for information about educational, training or course offers	23	23	27	28
Doing an online course (of any subject)	3	3	5	5
Consulting the internet with the purpose of learning	16	21	30	35
<b>All persons who used the internet in previous 3 months</b>	<b>57</b>	<b>63</b>	<b>65</b>	<b>67</b>

Source: CSO



**Table 18.3 Percentage of individuals aged 16-74 who made purchases on the internet and type of purchase for private purposes**

	%			
Types of goods and services ordered in last 12 months	2007	2008	2009	2010
Food/groceries	2	2	2	2
Household goods	3	3	5	6
Films/music	10	10	10	10
Books/magazines/newspapers/e-learning material	8	9	10	11
Clothes/sports goods	5	7	11	13
Computer hardware	2	3	3	2
Electronic equipment	4	5	10	10
Share purchases/financial services/insurance	2	2	3	3
Tickets for events	11	12	21	22
E-learning material	n/a	n/a	n/a	1
Video games software and upgrades	n/a	n/a	5	4
Other computer software and upgrades	n/a	n/a	5	5
Telecommunications services	n/a	n/a	n/a	5
Holiday accomodation	n/a	n/a	23	23
Other travel arrangements	n/a	n/a	26	26
Medicine	n/a	n/a	n/a	1
Computer software and upgrades including games	n/a	5	n/a	n/a
Travel/holiday accomodation	n/a	21	n/a	n/a
<b>All persons aged 16-74 who have purchased on the internet in the last 12 months</b>	<b>33</b>	<b>36</b>	<b>37</b>	<b>36</b>

Source: CSO

**Table 18.4 Main results of enterprise ICT survey, as a percentage of all enterprises - March 2010**

	Unit	Manufacturing sectors	Construction sector	Selected services sectors	Total
<b>General information about ICT systems</b>					
Using a computer	%	99	97	92	93
Using intranet	%	47	36	40	41
Using LAN	%	74	62	60	62
Using extranet	%	22	15	20	20
Having a written ICT strategy	%	39	31	31	32
<b>Use of the internet</b>					
Using the internet	%	98	97	91	92
Having a website or homepage	%	84	64	66	68
<b>Type of external connection to the Internet</b>					
Modem/ISDN	%	24	20	23	23
Broadband	%	91	91	85	87

Source: CSO

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**Table 18.5 Levels of interaction with public authorities via the internet, as a percentage of all enterprises - March 2010**

	Unit	Manufacturing sectors	Construction sector	Selected services sectors	Total
<b>Interaction with public authorities via internet</b>					
For obtaining information	%	91	92	79	82
For obtaining forms	%	94	93	79	82
For returning filled-in forms	%	80	73	65	67
For full electronic case handling	%	76	76	63	66
Submit proposal by electronic tender system	%	37	55	29	32

Source: CSO

**Table 18.6 Purchases and sales via e-commerce enterprises, March 2010**

	Unit	Manufacturing sectors	Construction sector	Selected services sectors	Total
<b>Use of e-commerce for purchases (as % of total enterprises)</b>					
By internet or EDI	%	49	38	43	44
By internet	%	47	38	39	40
By EDI	%	11	8	13	12
<b>Use of e-commerce for sales (as % of total enterprises)</b>					
By internet or EDI	%	31	11	20	21
By internet	%	24	11	18	18
By EDI	%	11	3	6	7
<b>Percentage of purchases by e-commerce (as % of total purchases)</b>					
By internet or EDI	%	19	7	23	21
By internet	%	13	5	10	11
By EDI	%	6	2	13	11
<b>Percentage of sales by e-commerce (as % of total turnover)</b>					
By internet or EDI	%	26	1	26	24
By internet	%	11	1	8	8
By EDI	%	16	0	18	16

Source: CSO

**Table 18.7 Selected telecommunications data**

	Unit	2009	2010
<b>Fixed</b>			
Total fixed access paths	'000	1,952	1,858
<b>Mobile</b>			
Post-paid subscribers	'000	1,722	1,876
Pre-paid subscribers	'000	3,432	3,397
<b>Total mobile subscribers (incl. HSDPA)</b>	<b>'000</b>	<b>5,154</b>	<b>5,273</b>
<b>Average Revenue per user per month</b>	<b>€</b>	<b>36.93</b>	<b>34.42</b>
<b>Mobile penetration rates</b>			
including HSDPA	%	115.59	117.95
excluding HSDPA	%	105.50	105.16

Source: ComReg

**Table 18.8 Selected broadcasting data**

	<i>Thousands</i>	
	Q2 2009	Q2 2010
<b>Number of television households</b>	<b>1,580</b>	<b>1,586</b>
<i>of which</i>		
Digital satellite	646	729
Digital cable	251	274
Analogue cable	305	240
Other (inc. Irish & UK terrestrial; not cable/satellite)	378	343

Source: ComReg

**Table 18.9 Business expenditure on research and development for all enterprises**

	<i>€m</i>
	2009
Current expenditure	1,543
<i>of which:</i>	
Labour costs	947
Other current costs	595
Capital expenditure	326
<i>of which:</i>	
Land and buildings	50
Payments made for licences to use intellectual products	24
Instruments and equipment (excluding software)	222
Software purchased wholly for R & D purposes	28
Software development by company in-house and used in-house	3
<b>Total Research &amp; Development expenditure</b>	<b>1,868</b>

Source: CSO and Forfás

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**Table 18.10 Total headcount of research personnel in all enterprises**

	<i>Number</i>
	<b>2009</b>
<b>PhD qualified researchers</b>	1,639
Male	1,129
Female	509
<b>Other researchers</b>	7,321
Male	5,521
Female	1,801
<b>Technicians</b>	3,572
Male	2,706
Female	865
<b>Support Staff</b>	3,241
Male	2,245
Female	997
<b>All R&amp;D Staff</b>	15,773
Male	11,601
Female	4,172

Source: CSO and Forfás

**Table 18.11 Number of enterprises engaged in research and development activities**

	<b>Unit</b>	<b>2009</b>
<b>Size of R&amp;D spend</b>		
< €100,000	No.	435
	%	33.9
€100,000 to € 499,999	No.	439
	%	34.2
€500,000 to €1,999,999	No.	277
	%	21.6
€2,000,000 to €4,999,999	No.	65
	%	5.1
>= €5,000,000	No.	67
	%	5.2
<b>Total</b>	No.	<b>1,283</b>
	%	<b>100.0</b>

Source: CSO and Forfás



