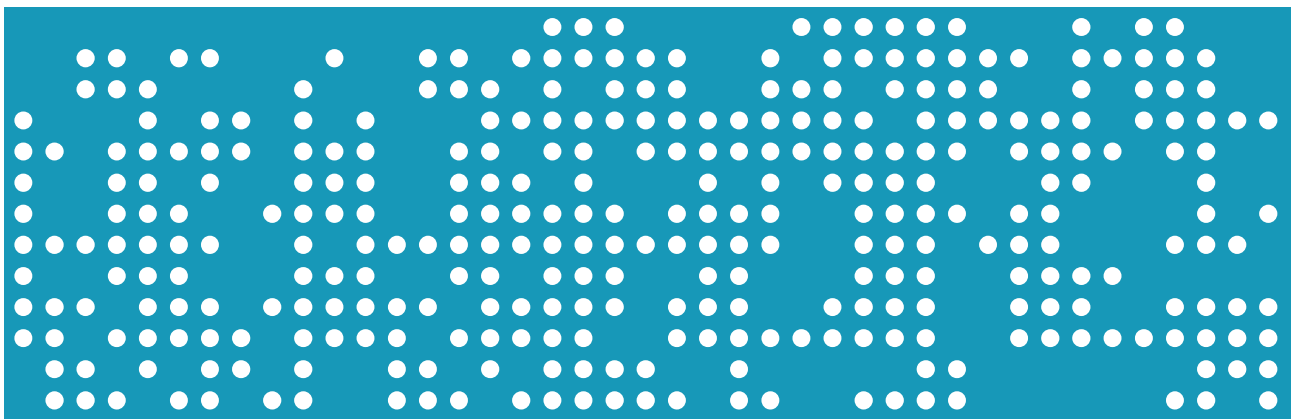GOBIERNO
DE ESPAÑA

MINISTERIO
DE INDUSTRIA, TURISMO
Y COMERCIO

# Information and Communication Technologies in SMEs and large companies in Spain

## 2010 Edition

*Contents*

**GOBIERNO DE ESPAÑA** — **MINISTERIO DE INDUSTRIA, TURISMO Y COMERCIO**

**Red.es would particularly like to thank the Subdirectorate General for Business Statistics of the National Statistics Institute for their collaboration and cooperation in preparing the data used in this report, by virtue of the agreement between the two organisations**

# 1.  NOTEWORTHY ASPECTS

- **All (100%) large companies have computers.** The average for all SMEs and large companies is 98.6%, being computers the most common ICT infrastructure.

- **Internet connection, e-mail and broadband have a larger penetration rate than mobile phones.** Of businesses with 10 or more employees, 90.9% have company mobile telephones. Internet connection rate reaches 96.2%, followed by 94.7% of businesses with e-mail and 93.8% with broadband.

- **The growth of local networks, including wireless, is significant.** With 4.5% and 5.5% respectively, they have overtaken broadband (1.6%), Internet access (1.3%) and computers (0.8%).

- **Over 97% of SMEs and large companies that connect to the Internet do so over broadband.** Percentages reach almost 100% if we only include medium-sized and large companies.

- **In total, 7 out of 10 large companies connect to the Internet via mobile phone.** A total of 51.3% medium-sized companies connect in this way, and 30.5% of small businesses. The average number of businesses connecting via mobile phone is 34%.

- **Internet connection via mobile phone has grown by 4.6% over the last year and by 10% in two years.** The largest leap, 9%, occurs in companies of between 50 and 249 employees. In the case of large companies with 250 or more employees the increase is 5%, followed by 4.1% in those with between 10 and 49 employees.

- **A total of 60.2% large companies have employees who connect to company ICT systems via external telematic networks in the course of their work.** Distribution according to company size shows that in the case of companies with between 50 and 249 employees the percentage rises to 33%, although in smaller companies (10 to 49 employees) it stands at 12.8%.

- **Around 59% of SMEs and large companies have their own web page, and of these 90% use it for presenting the company.** Access to product catalogues or price lists (56.1%) and privacy policy or certification statements (45.1%) are the next two most common purposes.

- **Over 97% of large companies and nearly 87% of medium-sized businesses contact the public administration via the Internet.** The average of SMEs and large companies is 67.8%. The two main reasons for interacting are to obtain information and obtain forms, over 60% in both cases.

- **The financial sector has the highest percentage, 91.4%, of companies interacting with the public administration via the Internet.** In addition,

companies from this sector are also those with the most bidirectional contact with the e-administration (submitting completed forms (81.3%) and complete electronic management (80.3%)).
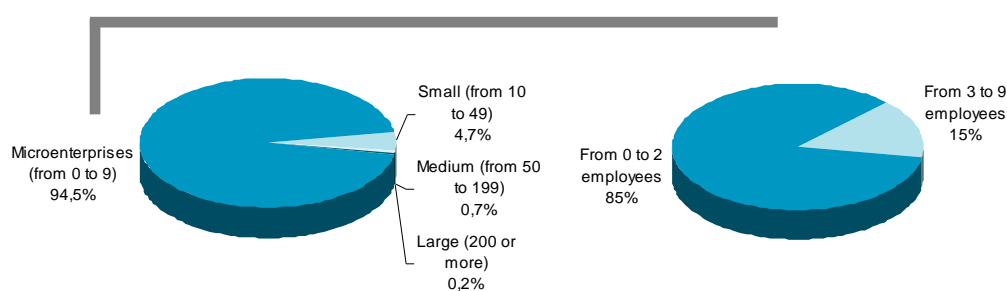
- **Large companies do not only make the most extensive use of digital certificates (90.5%), but are also the group that has most increased use of the latter in a single year (an increase of 8 percentage points).** In the case of medium-sized and small businesses, percentages of use are 77.1% and 48.3%, this being a 5.3% and 2.8% increase over the previous year.

- **A total of 20.3% of companies make purchases using e-commerce, compared to 11.1% who sell via this means.** Businesses involved in selling and repairing vehicles make the widest use of e-commerce (52.1%), over 3 points above the IT, telecommunications and audio-visual devices sector. E-commerce sales are led by hotels and travel agencies (64.2%), nearly 45 points ahead of the next sector on the list, (IT, telecommunications and audio-visual devices).

- **Around 60% of the value of e-commerce sales is concentrated in industry.** This is followed by the wholesale trade, with 19.5%. Transport and storage, together with hotels and travel agencies, occupy around 5%, and the remaining sectors do not reach 5%.

- **Transport and storage companies make the widest use of RFID technologies (12.2%).** In global terms, they are used by 4.1% of SMEs and large companies, particularly the latter, where the percentage reaches 20%.

# 2. BUSINESS STRUCTURE IN SPAIN

## 2.1. Companies according to number of employees

According to data published by the National Statistics Institute (INE), contained in the Central Companies Directory (DIRCE 2009), the total number of companies in Spain amounts to 3,355,830, with microenterprises (0 to 9 employees) playing a major role as they represent 94.5% of the business fabric. Small companies (10 to 49 employees) represent 4.7%, followed by medium-sized companies (50 to 199 employees) with 0.7% and, lastly, large companies (with 200 or more employees) which account for 0.2% of the total number of companies in Spain. Among microenterprises, those with 0 to 2 employees stand out, with more than 2.6 million companies of this type which comprise 85% of all microenterprises in the country, compared to 15% for those with 3 to 9 workers.

**Figure 1. Distribution of companies and micro-companies in Spain by number of employees**



Microenterprises (from 0 to 9) 94,5%
Small (from 10 to 49) 4,7%
Medium (from 50 to 199) 0,7%
Large (200 or more) 0,2%
From 0 to 2 employees 85%
From 3 to 9 employees 15%

**All companies: 3,355,830**     **Total number of microenterprises: 3,170,466**

*Source: ONTSI (Spanish Observatory for Telecommunications and the Information Society) based on DIRCE (Central Companies Directory) data for 2009*

## 2.2. Representation of the workforce

Although microenterprises account for 94.5% of the Spanish business fabric, these companies only employ around 26.5% of the country's workers. In general, we can see that the workforce is distributed in a relatively equal manner between the four types of companies that are classified according to the number of employees. Thus, according to data from the Survey on the Labour Situation conducted by the Ministry of Labour and Immigration in 2008, companies with 11 to 50 workers have 26.7% of the workforce, closely followed by 26.5% for the sector of 1 to 10 workers and 25.9% for companies with more than 200. Almost 21% corresponds to companies with 51 to 250 employees.

**Figure 2. Distribution of the workforce (2008)**
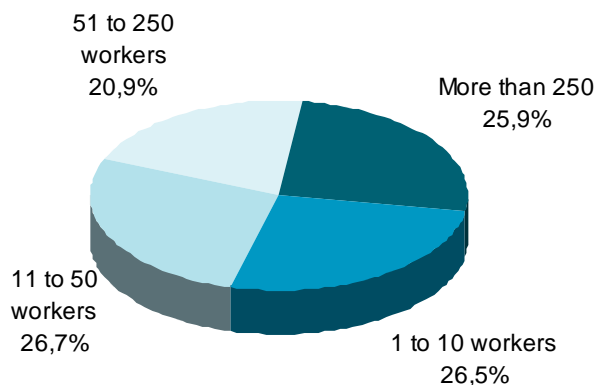
Members of the company not considered employees, in other words, partners or owners of microenterprises or the self-employed are not included; if they were, the percentage of workers in microenterprises would rise.

## 2.3.  Companies per Autonomous Region

Four Autonomous Regions each contain more than 10% of the total number of Spanish companies. Taken together, these four account for 59.8% of companies: Catalonia (18.5%), Madrid (15.3%), Andalusia (15.2%) and the Autonomous Region of Valencia (10.8%). Some 5 percentage points behind are regions like Galicia, which has 6% of the country's companies, and the Basque Country and Castile-León, with 5.1% each. Ceuta and Melilla and La Rioja have percentages below 1%.
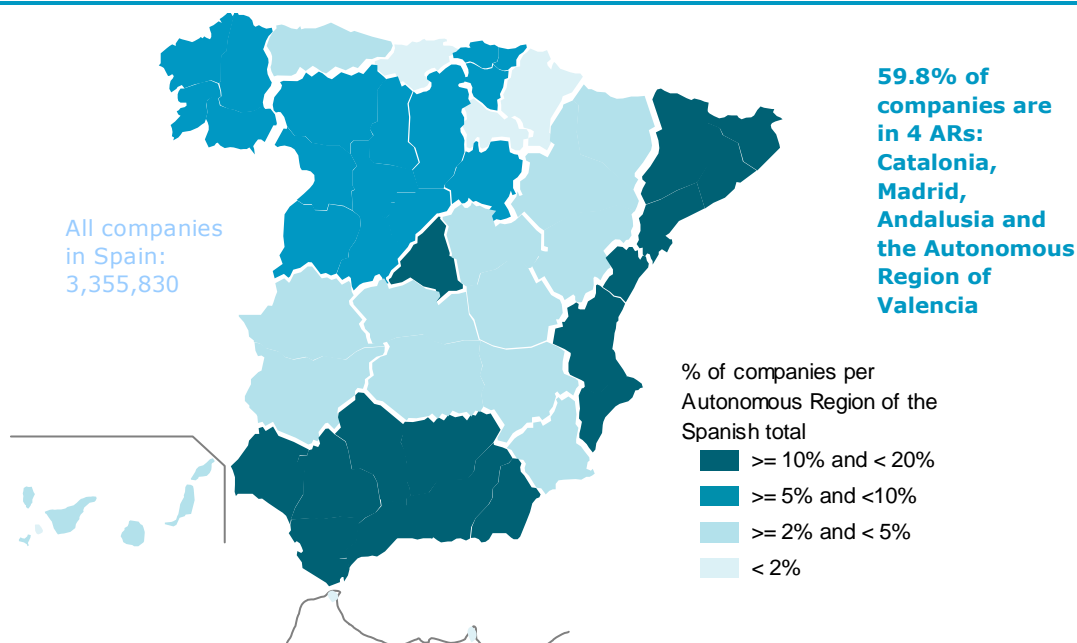
## Table 1. Companies per Autonomous Region

| | Total companies | % total companies per AR | Total microenterprises (0 to 9 workers) | % total microenterprises per AR | % microent/all companies in the AR | Total SMEs and large companies (of 0 or more) | % total SMEs and large companies per AR | % SMEs and large companies/all companies in the AR |
|---|---|---|---|---|---|---|---|---|
| Total Spain | 3.355.830 | 100,0% | 3.170.466 | 100,0% | 94,5% | 185.364 | 100,0% | 5,5% |
| Andalusia | 510.072 | 15,2% | 484.857 | 15,3% | 95,1% | 25.215 | 13,6% | 4,9% |
| Aragon | 93.283 | 2,8% | 87.693 | 2,8% | 94,0% | 5.590 | 3,0% | 6,0% |
| Asturias | 71.853 | 2,1% | 68.372 | 2,2% | 95,2% | 3.481 | 1,9% | 4,8% |
| Balearic Islands | 91.826 | 2,7% | 87.140 | 2,7% | 94,9% | 4.686 | 2,5% | 5,1% |
| Canary Islands | 139.381 | 4,2% | 131.868 | 4,2% | 94,6% | 7.513 | 4,1% | 5,4% |
| Cantabria | 39.611 | 1,2% | 37.526 | 1,2% | 94,7% | 2.085 | 1,1% | 5,3% |
| Castile-León | 170.626 | 5,1% | 162.271 | 5,1% | 95,1% | 8.355 | 4,5% | 4,9% |
| Castile-La Mancha | 134.479 | 4,0% | 127.395 | 4,0% | 94,7% | 7.084 | 3,8% | 5,3% |
| Catalonia | 619.624 | 18,5% | 583.228 | 18,4% | 94,1% | 36.396 | 19,6% | 5,9% |
| Valencia Autonomous Region | 362.844 | 10,8% | 342.473 | 10,8% | 94,4% | 20.371 | 11,0% | 5,6% |
| Extremadura | 67.181 | 2,0% | 64.191 | 2,0% | 95,5% | 2.990 | 1,6% | 4,5% |
| Galicia | 201.263 | 6,0% | 191.251 | 6,0% | 95,0% | 10.012 | 5,4% | 5,0% |
| Madrid | 511.804 | 15,3% | 481.804 | 15,2% | 94,1% | 30.000 | 16,2% | 5,9% |
| Murcia | 95.636 | 2,8% | 89.688 | 2,8% | 93,8% | 5.948 | 3,2% | 6,2% |
| Navarre | 43.282 | 1,3% | 40.153 | 1,3% | 92,8% | 3.129 | 1,7% | 7,2% |
| Basque Country | 172.152 | 5,1% | 161.446 | 5,1% | 93,8% | 10.706 | 5,8% | 6,2% |
| La Rioja | 23.525 | 0,7% | 22.056 | 0,7% | 93,8% | 1.469 | 0,8% | 6,2% |
| Ceuta and Melilla | 7.388 | 0,2% | 7.054 | 0,2% | 95,5% | 334 | 0,2% | 4,5% |

*Source: ONTSI (Spanish Observatory for Telecommunications and the Information Society) based on DIRCE (Central Companies Directory) data for 2009*

The map below shows the distribution of companies contained in the table above.

## Figure 3. Distribution of companies per Autonomous Region



**59.8% of companies are in 4 ARs: Catalonia, Madrid, Andalusia and the Autonomous Region of Valencia**

All companies in Spain: 3,355,830

% of companies per Autonomous Region of the Spanish total

- >= 10% and < 20%
- >= 5% and <10%
- >= 2% and < 5%
- < 2%

*Source: ONTSI (Spanish Observatory for Telecommunications and the Information Society) based on DIRCE (Central Companies Directory) data for 2009*

## 2.4. Sectoral grouping of companies

Distribution of Spanish companies by sector varies according to whether they are micro-enterprises (business with between 0 and 9 employees) or SMEs and large companies (with 10 or more employees), although in both cases the financial sector has the least number of businesses, against construction, with the most.

This survey will focus on Spanish SMEs and large companies, i.e., those with 10 or more employees. The table below provides information on the distribution according to activity sectors. The main groups shown follow the National Economic Activity Classification (CNAE-2009) of the National Statistics Institute (INE). This classification is used throughout the study thereby enabling us to show a more detailed breakdown of results.

**Table 2. Sector grouping of companies with 10 or more employees in Spain**

| No. | Category name | CNAE (Spanish Economic Activity Code) | Category description | Total companies | % of total companies |
|-----|---------------|----------------------------------------|----------------------|-----------------|----------------------|
| 1 | Industry | 10 to 39 | 10-33: Manufacturing Industry; 35: Supply of electricity, gas, steam and a/c; 36-39: supply of water, sanitation, waste and decontamination | 40.044 | 21,6% |
| 2 | Construction | 41 to 43 | Construction | 36.908 | 19,9% |
| 3 | Sale and repair of motor vehicles | 45 | Sale and repair of motor vehicles and motorcycles | 5.072 | 2,7% |
| 4 | Wholesale Trade | 46 | Wholesale commerce | 19.293 | 10,4% |
| 5 | Retail Trade | 47 | Retail trade (except motor vehicles) | 10.261 | 5,5% |
| 6 | Hotels, campsites and travel agencies | 55 and 79 | Hotels and campsites; travel agencies | 3.852 | 2,1% |
| 7 | Restaurants and bars | 56 | Restaurants and bars | 8.164 | 4,4% |
| 8 | Transportation and storage | 49 to 53 | Transportation and storage (including postal service) | 9.899 | 5,3% |
| 9 | IT, Telecommunications and Audiovisual | 58 to 63 | Information and Communications (including audiovisual services) | 4.361 | 2,4% |
| 10 | Real estate and administrative activities | 68 + (77 to 82 (excluding 79)) | 68: real estate Activities; (77 to 82 excluding 79) Administrative Activities and auxiliary services (excluding 79, travel agencies) | 11.185 | 6,0% |
| 11 | Professional activities | 69 to 74 | (69 to 74) Scientific and Technical Professional activities (without 75: veterinary) | 9.947 | 5,4% |
| 12 | Financial | 64.19 + 64.92 + 65.1 + 65.2 + 66.12 + 66.19 | Financial and insurance activities | 800 | 0,4% |
| **Total companies in sectors covered by the survey (Universe)** | | | | **159.786** | **86,2%** |
| **Other companies (from sectors not covered by the survey)** | | | | **25.578** | **13,8%** |
| **TOTAL SPANISH companies** | | | | **185.364** | **100,0%** |

*Source: ONTSI (Spanish Observatory for Telecommunications and Information Society) based on DIRCE (Central Company Directory) data for 2009*

Most SMEs and large companies (10 or more employees), 21.6%, are found in the industry sector. The financial sector has the smallest percentage (0.4%). The distribution of the remaining sectors differs from that of micro-enterprises. In this case, the group with the greatest percentage of SMEs and large companies is formed, in addition to industry sector companies, by construction companies (19.9%) and wholesale traders (10.4%). These three account for nearly 52% of companies.

The next group, with slightly over 27% of companies with 10 or more employees, consists of companies from the real estate and administrative activities, retail trade, professional activities, transport and storage, and restaurants and bars sectors, with concentrations of between 4% and 6%. Together with the financial sector, those comprising sale and repair of motor vehicles, hotels, camping sites and travel agencies, and also IT, telecommunications and audio-visual devices, have the least number of SMEs and large companies compared with the national total.

# 3. ICTS IN SPANISH SMES AND LARGE COMPANIES

This chapter analyses the situation of ICTs in SMEs and large companies (those with 10 employees or more).

The following paragraph includes information on the incorporation of ICT infrastructure and the use made of this by companies with 10 or more employees. These data have been analysed according to the number of employees and the sectors in which the companies are mainly engaged.

## 3.1. Infrastructure and connectivity

### 3.1.1. Access and network devices

ICT infrastructures are widely extended among SMEs and large companies. Except for wireless computer networks and other technologies (GPS, POS, etc.), where penetration in companies of more than 10 employees reaches 34.7% and 26.8%, respectively, other infrastructures are present in percentages over 80%, and 90% in some cases.

Breaking down the data according to company size shows a direct proportion between the number of employees and the penetration of the different information and communication technologies analysed.

**Figure 4. ICT infrastructure and connectivity by type of company**
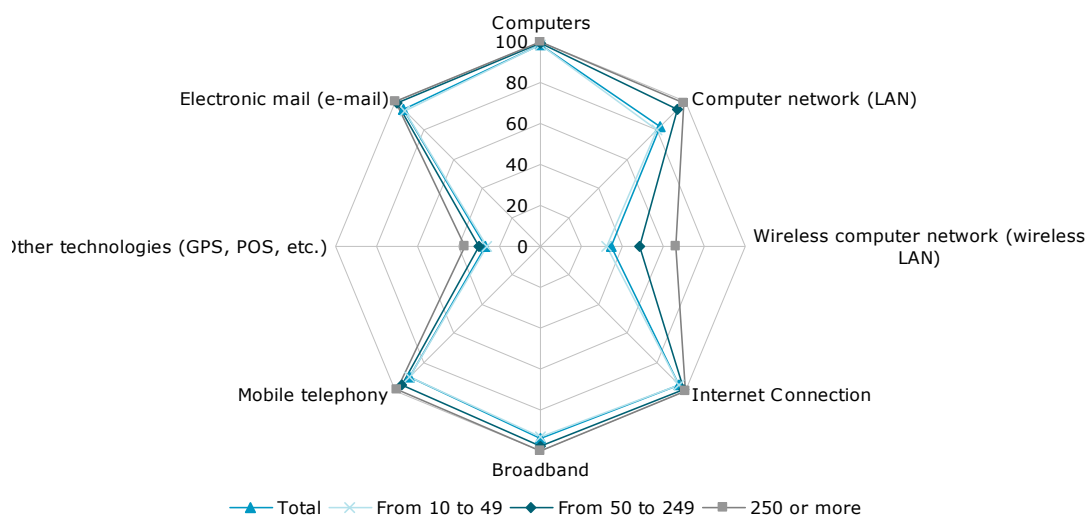


*Base: all companies with 10 or more employees*

*Source: ONTSI using data from the INE 2009*

**Nearly 94% of SMEs and large companies have a broadband Internet connection**

A total of 98.6% of companies with 10 or more employees have computers, and in 96.2% of cases these are connected to the Internet. E-mail and broadband also have significant average penetration figures of around 94% and 95%. In contrast, extranet

and intranet are only present in 15% and 23% of SMEs and large companies, respectively. While 83% have a computer network, 35% of these are wireless networks.

In the segment of companies with the largest number of employees (250 or more), all companies have computers and nearly 100% have Internet, e-mail and broadband Internet connection. In this case, the presence of technological infrastructures is widespread. Indeed, intranet[1] and extranet[2] reach penetration rates of 81% and 60%, more than 40 percentage points above average.

**All (100%) large companies have computers**

**Internet connection, e-mail and broadband have a larger penetration rate than mobile phones**

In 98.7% of cases, medium-sized companies choose broadband Internet connection, three points above small businesses making the same choice. Percentages are equally high with regard to e-mail (98.4% of medium-sized and 94.1% of small enterprises). The presence of intranet and extranet is less frequent in small enterprises than in medium-sized companies, and in both cases intranet is more common.

#### Table 3. Availability of ICT infrastructure by company size

| % of companies with: | Total | From 10 to 49 | From 50 to 249 | 250 or more |
|---|---|---|---|---|
| Mobile telephony | 90,9 | 90,0 | 95,3 | 98,6 |
| Computers | 98,6 | 98,5 | 99,4 | 100,0 |
| Internet Connection | 96,2 | 95,7 | 98,7 | 99,9 |
| Electronic mail (e-mail) | 94,7 | 94,1 | 98,4 | 99,8 |
| Broadband | 93,8 | 93,0 | 97,8 | 99,7 |
| Computer network (LAN) | 83,0 | 81,0 | 94,4 | 98,8 |
| Wireless computer network (wireless LAN) | 34,7 | 32,1 | 48,4 | 65,8 |
| Intranet (website for internal use) | 23,1 | 19,0 | 42,0 | 81,2 |
| Extranet (external access to the Internet) | 14,6 | 11,6 | 28,1 | 59,9 |
| Other technologies (GPS, POS, etc.) | 26,8 | 26,0 | 30,3 | 36,7 |

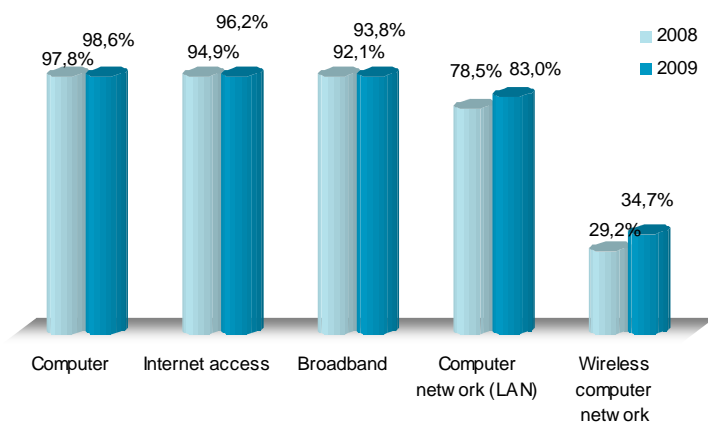*Base: all companies with 10 or more employees*

*Source: ONTSI using data from the INE 2009*

The annual evolution of the main ICT indicators analysed has been positive in all cases. The greatest increases correspond to SMEs and large companies connecting to computer networks (LAN) and wireless computer networks, with more than 4 and 5 percentage points above figures for the previous year, respectively. The most significant increases are found in indicators with a lower base level. In those where penetration encompass nearly all companies in recent years, increases are less marked.

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[1] Intranet: Internal network of an organisation that provides content and services for the exclusive use of the organisation, usually based on Internet standards.

[2] Extranet: Secure extension of the Intranet enabling an external user to access some parts of the organisation's Intranet.

**Figure 5. Evolution of the main 2008-2009 ICT indicators**



*Base: all companies with 10 or more employees*

*Source: ONTSI using data from the INE 2009*

## Access and use of ICTs by economic activity sector

Equipment and connectivity indicators reveal significant penetration levels in all sectors. In the financial and IT, telecommunications and audio-visual activities sectors, 100% of companies with 10 or more employees have computers, Internet connection and e-mail. Broadband is also present in 100% of companies engaging in IT activities, and 99.7% of those in the financial sector. The position of hotels and travel agencies is significant, with 100% of companies having computers and Internet and around 99% with e-mail and broadband.

**IT, telecommunications and audio-visual activities, together with the financial and hotels and travel agencies sectors, lead the field in infrastructure and connectivity**

Another group of sectors with good infrastructures and technological connectivity is formed by professional activities, wholesale traders and the sale and repair of vehicles. In these cases, basic indicators on the availability of computers, access to Internet, e-mail and broadband connection reach values of over 90% in all cases.

The restaurants and bars sector has the least penetration in most indicators included in the chart, except those referring to other technologies (GPS, POS, etc.) in which they lead the field, a situation which would seem logical given the nature of this kind of business.

**In the group comprising restaurants and bars, 60% have technologies such as GPS or POS**

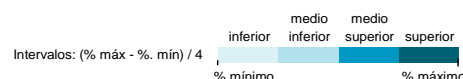With regard to computer networks, these are mostly to be found in companies from the following sectors: financial, IT, telecommunications and audio-visual activities, professional activities, wholesale trade, sale and repair of vehicles and hotels and travel agencies. The presence of wireless networks, however, is only significant in the IT, telecommunications and audio-visual activities sector.

**In financial sector companies, 85% have access to their own intranet**

Another two indicators - percentage of both intranet and extranet access - show not only the least penetration among SMEs and large companies: they are also the most variable according to the sector in which the company is established. The financial sector is number one in this area, with nearly 85% of companies with intranet and 63% with extranet. The next sector in line is IT, telecommunications and audiovisual activities, with average penetration rates of 57% and 44%, respectively. In the remaining sectors, penetration is low.

**Table 4. Infrastructure and ICT access by sector**

| % of companies with: | Total Spain | Industry | Construction | Vehicle sales and repairs | Wholesale Trade | Retail Trade | Hotels and travel agencies | Restaurants and bars | Transportation and storage | IT, Telecommunications and Audiovisual | real estate and Admin Activities. | Professional activities | Financial |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Mobile telephony | 90,9 | 89,3 | 91,8 | 91,8 | 94,5 | 85,3 | 83,8 | 69,6 | 93,7 | 93,6 | 91,3 | 90,3 | 98,4 |
| Computers | 98,6 | 98,3 | 98,3 | 99,5 | 99,9 | 98,9 | 100,0 | 90,7 | 96,1 | 100,0 | 98,5 | 99,8 | 100,0 |
| Internet Connection | 96,2 | 96,0 | 93,7 | 98,9 | 99,4 | 94,9 | 100,0 | 82,9 | 94,7 | 100,0 | 96,0 | 99,7 | 100,0 |
| Electronic mail (e-mail) | 94,7 | 94,4 | 91,7 | 98,2 | 98,0 | 92,3 | 99,2 | 79,1 | 93,5 | 100,0 | 95,4 | 99,7 | 100,0 |
| Broadband | 93,8 | 93,3 | 90,6 | 98,4 | 98,3 | 93,2 | 99,1 | 78,8 | 92,7 | 100,0 | 91,0 | 98,2 | 99,7 |
| Computer network (LAN) | 83,0 | 84,0 | 72,9 | 93,0 | 95,5 | 84,1 | 90,2 | 57,1 | 82,2 | 97,5 | 73,5 | 95,1 | 99,9 |
| Wireless computer network (wireless LAN) | 34,7 | 33,4 | 30,8 | 45,9 | 43,0 | 29,9 | 43,2 | 25,3 | 28,8 | 60,3 | 26,5 | 41,8 | 41,1 |
| Intranet (website for internal use) | 23,1 | 21,8 | 11,4 | 34,1 | 29,8 | 22,6 | 34,2 | 11,2 | 25,3 | 57,3 | 25,2 | 39,4 | 84,7 |
| Extranet (external access to the Internet) | 14,6 | 12,8 | 5,1 | 24,8 | 20,9 | 12,2 | 24,6 | 5,5 | 19,2 | 44,3 | 14,7 | 27,9 | 63,0 |
| Other technologies (GPS, POS, etc.) | 26,8 | 20,0 | 16,1 | 54,8 | 33,3 | 57,6 | 55,6 | 56,9 | 39,4 | 29,6 | 22,2 | 23,8 | 32,2 |

Intervalos: (% máx - %. mín) / 4

| | inferior | medio inferior | medio superior | superior |
|---|---|---|---|---|
| | % mínimo | | | % máximo |

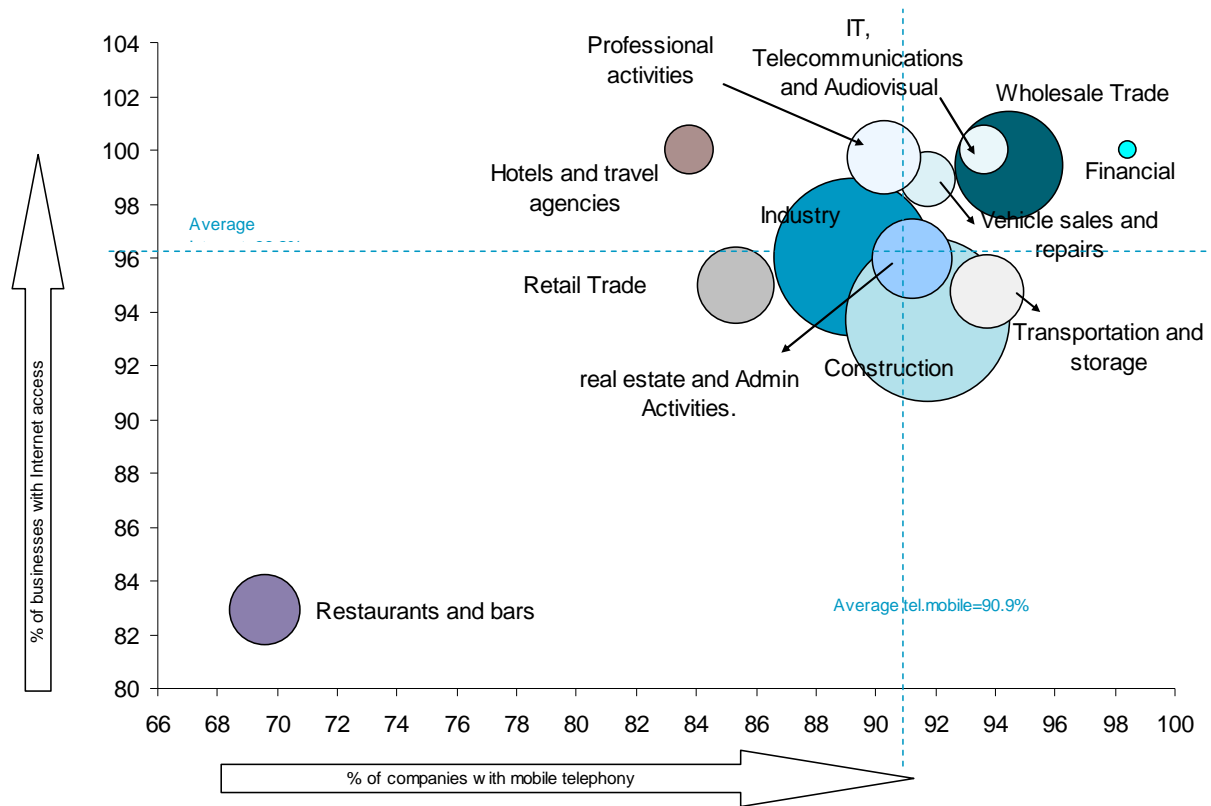*Base: all companies with 10 or more employees*

*Source: ONTSI using data from the INE 2009*

The following figure shows the position of each sector based on the availability of mobile phones and Internet. The general trend points to a certain concentration of sectors lying in the upper right hand corner, which is the ideal situation, as it includes sectors with the greatest penetration of both mobile phones and Internet. Specifically, leading sectors in this situation are: financial services, wholesale trade, IT, telecommunication and audio-visual activities and sale and repair of vehicles.

At the other end of the scale are the companies in the lower left hand corner, which only includes restaurants and bars, and which have the smallest rate of penetration of either indicator. It may be seen that this is the only group of companies trailing the concentrated group comprising the other sectors.

**Restaurants and bars lag behind in mobility indicators (Internet and mobile phones)**

**Figure 6. Companies with Internet access vs. companies with mobile telephony**



Note: the size of the bubble is proportional to the number of sector companies

*Base: all companies with 10 or more employees*

*Source: ONTSI using data from the INE 2009*

The upper left hand corner consists of companies with the highest Internet access rate and the fewest mobile phones. Hotels and travel agencies and most companies in the professional activities sector can be found in this situation. In contrast, high penetration of mobile phone combined with lower Internet rates correspond to the lower right hand corner, where all businesses engaged in transport and storage and most construction companies can be found.

### 3.1.2. Type of Internet connection

The most popular type of Internet connection chosen by companies with 10 or more employees is broadband. This is the access technology used by 97.5% of companies with Internet connection. This rate rises to nearly 100% as the number of employees increases. Connection via mobile phones, which is the second most popular connection method chosen by SMEs and large companies, shows greater differences according to the size of the company. While over 70% of large companies connect to the Internet via

**Seven out or ten large companies connect to the Internet via mobile phone**

mobile phones, little more than 30% of small businesses choose the same method, giving an average rate of 34%. In any event, this connection method is becoming increasingly prevalent in the business sector, where percentages have risen between 4 and 9 percentage points over the previous year, depending on the business segment. In the group of companies with 10 or more employees, 34% represents an increase of 4.6% over the 29.4% figure for the previous year, gaining 10 points in two years. The largest increase, 9%, occurs in companies of between 50 and 249 employees. In the case of large companies with 250 or more employees the increase is 5%, followed by 4.1% in those with between 10 and 49 employees.

<div style="text-align:center"><strong style="color:#1f7a99">Figure 7. Type of Internet connection</strong></div>
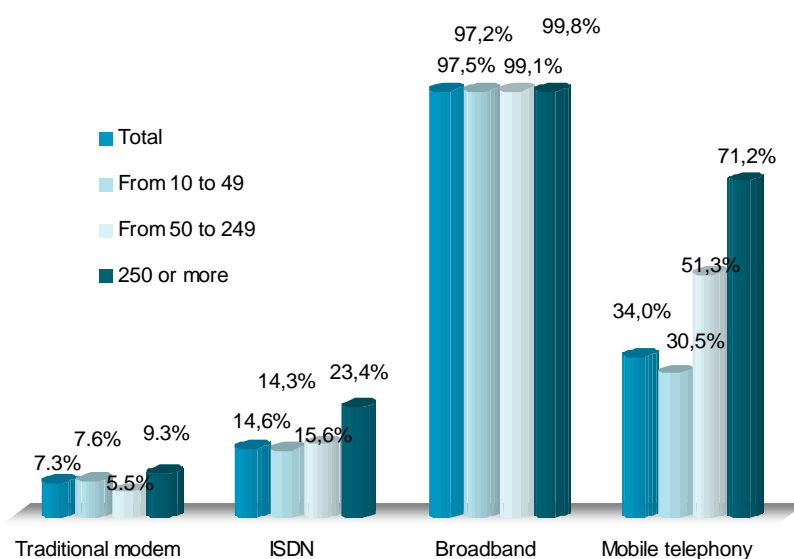


Base: all companies with 10 or more employees with Internet

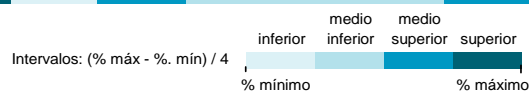Source: ONTSI using data from the INE 2009

### 3.1.3.    Infrastructure by Autonomous Region

Analysing the results according to autonomous region it can be seen that there are no major regional differences in the penetration of basic ICT indicators (IT, mobile phones, Internet and e-mail). Distribution tends to be generally even. Indeed, the greatest difference between maximum and minimum values does not reach 5%, as is the case in wireless computer networks (4.9%).

Penetration levels of the main ICT indicators are high in a good number of regions. The group comprising the regions with the highest rates in each indicator consists of a larger number of autonomous regions than the other groups with average or low rates of penetration. For example, in the case of IT or Internet connection, 11 and 12 communities are within the group of regions with the highest values, respectively, while the groups of minimum penetration comprise only 2.

## Table 5. Companies with access to the main ICT components by Autonomous Region.

| % companies with | Mobile telephone | Computers | Internet Connection | Broadband (of no. companies w/Internet) | Electronic mail (e-mail) | Computer network (LAN) | Wireless computer network | Intranet | Extranet | Other technologies (GPS, POS, etc.) |
|---|---|---|---|---|---|---|---|---|---|---|
| **Total Spain** | 90,9 | 98,6 | 96,2 | 97,5 | 94,7 | 83,0 | 34,7 | 23,1 | 14,6 | 26,8 |
| Andalusia | 88,8 | 98,0 | 94,4 | 97,4 | 92,1 | 79,9 | 35,3 | 17,8 | 9,7 | 25,6 |
| Aragon | 95,0 | 99,1 | 98,1 | 96,1 | 97,6 | 84,9 | 28,8 | 23,6 | 14,3 | 25,7 |
| Asturias | 86,8 | 99,0 | 97,5 | 96,9 | 95,6 | 82,0 | 37,1 | 18,9 | 12,5 | 22,4 |
| Balearic Islands | 92,5 | 99,7 | 99,0 | 97,9 | 98,1 | 88,6 | 38,0 | 22,3 | 14,5 | 34,3 |
| Canary Islands | 87,8 | 98,0 | 95,0 | 96,3 | 94,0 | 77,0 | 30,6 | 18,7 | 11,0 | 28,2 |
| Cantabria | 86,7 | 99,0 | 98,8 | 99,6 | 96,8 | 70,7 | 21,6 | 18,2 | 11,6 | 21,8 |
| Castile-León | 94,0 | 99,2 | 97,4 | 97,5 | 96,2 | 79,2 | 32,1 | 23,0 | 12,9 | 32,4 |
| Castile-La Mancha | 89,8 | 96,4 | 89,4 | 95,5 | 87,4 | 71,6 | 27,9 | 14,7 | 6,4 | 28,4 |
| Catalonia | 91,5 | 99,2 | 97,9 | 99,0 | 97,0 | 86,6 | 34,6 | 26,8 | 17,0 | 26,1 |
| Valencia Autonomous Region | 91,7 | 98,9 | 96,7 | 97,6 | 95,2 | 84,2 | 35,6 | 20,0 | 13,4 | 25,7 |
| Extremadura | 91,3 | 99,4 | 96,9 | 98,7 | 93,1 | 74,7 | 30,5 | 16,1 | 7,5 | 23,4 |
| Galicia | 92,0 | 97,7 | 92,9 | 96,1 | 90,6 | 80,8 | 33,4 | 19,3 | 12,0 | 29,3 |
| Madrid | 90,5 | 98,8 | 97,3 | 97,6 | 95,8 | 86,0 | 41,1 | 33,0 | 22,3 | 29,4 |
| Murcia | 93,3 | 99,5 | 91,5 | 95,5 | 89,8 | 81,2 | 33,9 | 18,7 | 9,3 | 23,5 |
| Navarre | 93,0 | 99,1 | 98,6 | 98,5 | 98,6 | 86,7 | 38,5 | 22,0 | 15,1 | 25,3 |
| Basque Country | 90,0 | 98,3 | 97,4 | 96,7 | 97,1 | 87,3 | 32,2 | 26,8 | 21,7 | 22,7 |
| Rioja (La) | 88,9 | 97,8 | 97,3 | 95,7 | 97,3 | 85,1 | 27,9 | 18,1 | 8,4 | 20,6 |
| Ceuta and Melilla | 81,4 | 95,8 | 88,6 | 98,7 | 86,9 | 83,7 | 31,0 | 20,0 | 12,4 | 29,7 |

Intervalos: (% máx - %. mín) / 4

inferior · medio inferior · medio superior · superior

% mínimo · % máximo

*Base: all companies with 10 or more employees*

*Source: ONTSI using data from the INE 2009*

As the sophistication of the technologies analysed increases, the number of communities with maximum penetration decreases. In the specific case of intranet, only Madrid has high values, and in the case of extranet, it is joined by the Basque Country.

Generally speaking, Madrid is technologically the best equipped and connected Autonomous Region. It forms part of the leading group in 7 of the 9 indicators selected. Other leading regions are Navarre and the Balearics, which are well positioned in 6, and Aragon and Catalonia in 5. Andalusia, the Canary Islands and Castile-La Mancha do not have maximum penetrations in any indicator.

**Figure 8. Companies with Internet connection by Autonomous Region.**

Companies (10 or more employees) with Internet connection in Spain: 96.2%

% companies with Internet connection

>= 98%

>= 97% and <98%

>= 94% and < 97%

< 94%
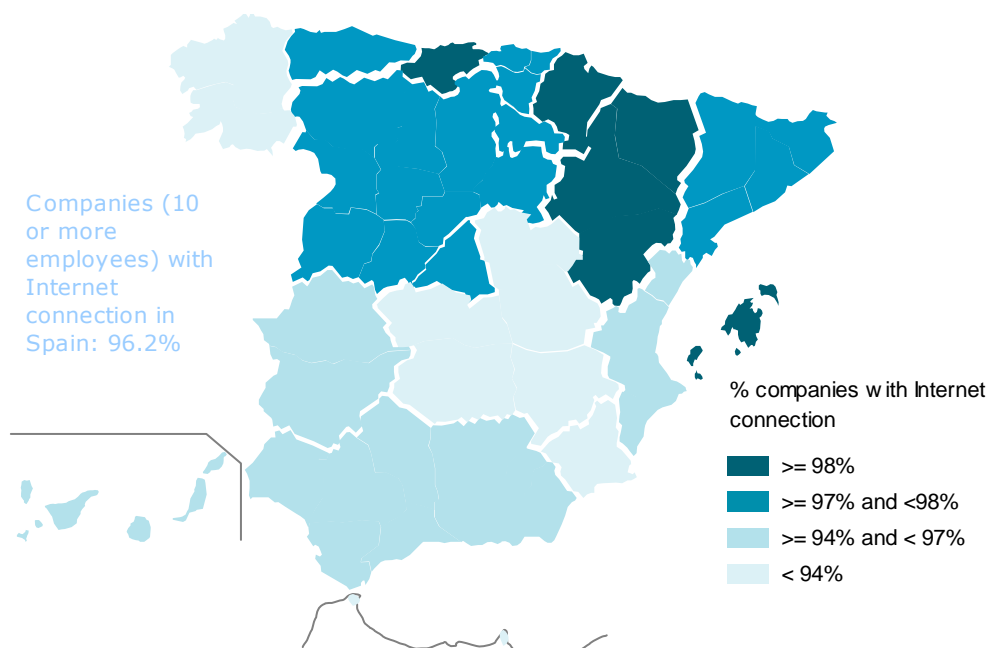
*Base: all companies with 10 or more employees*

*Source: ONTSI using data from the INE 2009*

Comparing the availability of Internet, which on average reaches 96.2% of companies with 10 or more employees, it can be seen that the Balearics, Cantabria, Navarre and Aragon lead the field.

**Figure 9. Companies with mobile phone by Autonomous Region.**

Companies with 10 or more employees with company mobile telephone in Spain : 90.9%

% companies with company mobile telephone

>= 93%

>= 91% and <93%

>= 88% and < 91%

< 88%
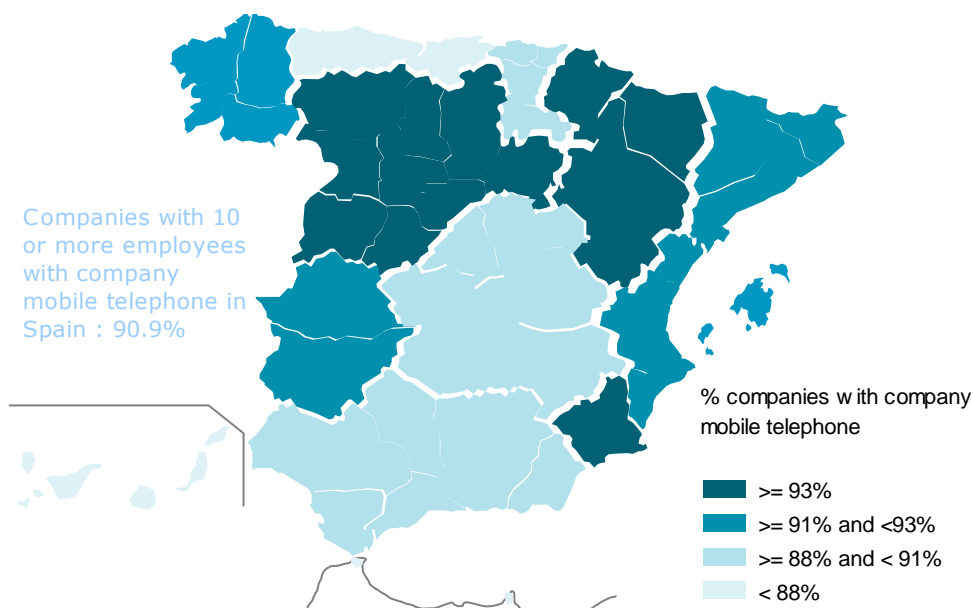
*Base: all companies with 10 or more employees*

*Source: ONTSI using data from the INE 2009*

With regard to company mobile phones, the leading communities are Aragon, Castile-Leon, Murcia and Navarre. In the case of broadband, used by 97.5% of SMEs and large companies with Internet, the leading group consists of Cantabria, Catalonia, Ceuta and Melilla, Extremadura and Navarre.

Companies with 10 or more employees, with broadband (out of companies with Internet) in Spain: 97.5%

% companies with broadband (out of companies with Internet) :

- ≥=98
- ≥=97% and <98%
- ≥=96% and <97%
- <96%
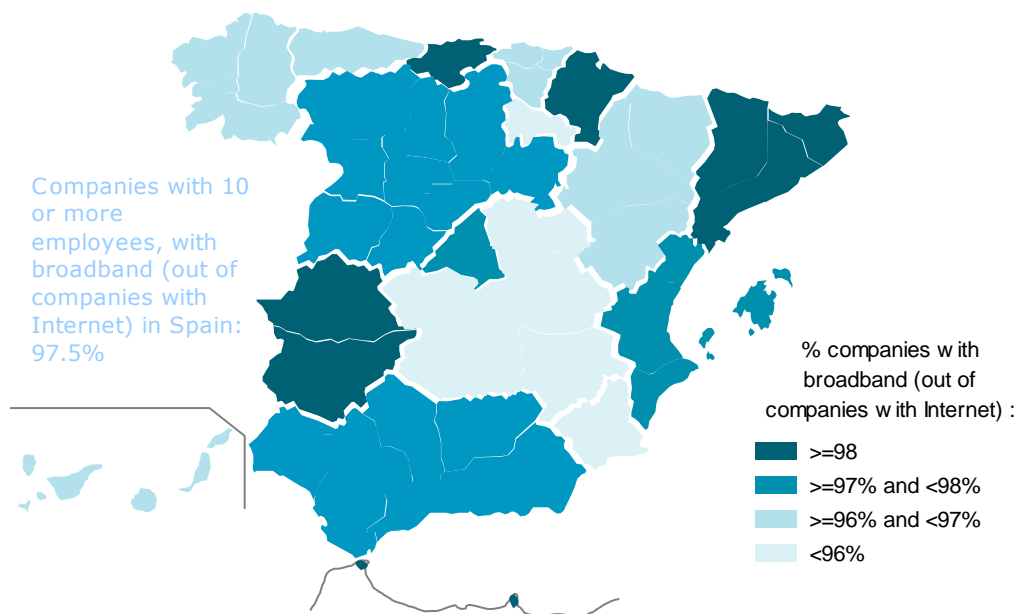
*Base: all companies with Internet access*

*Source: ONTSI using data from the INE 2009*

## 3.2. ICT use by employees

Over half the personnel of SMEs and large companies use computers in the course of their work. In the case of small enterprises, the proportion falls to up to 4 out of 10 employees, while in large companies it reaches nearly 60%. If the computer is connected to the Internet the percentages are slightly lower, with a total of 41.5%.

**Figure 11. Personnel who use computers and computers with Internet access at least once a week**
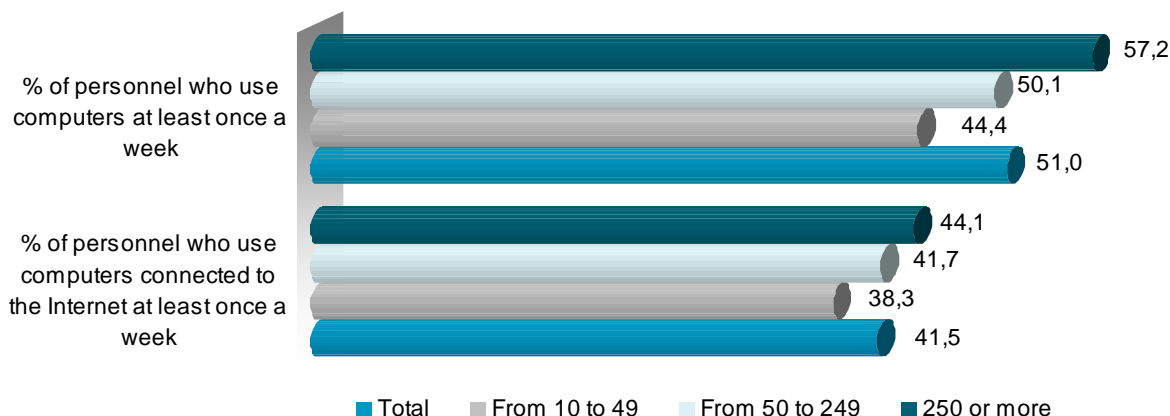


% of personnel who use computers at least once a week
- 250 or more: 57,2
- From 50 to 249: 50,1
- From 10 to 49: 44,4
- Total: 51,0

% of personnel who use computers connected to the Internet at least once a week
- 250 or more: 44,1
- From 50 to 249: 41,7
- From 10 to 49: 38,3
- Total: 41,5

Legend: ■ Total  ■ From 10 to 49  ■ From 50 to 249  ■ 250 or more

*Base: all employees in companies with 10 or more employees*

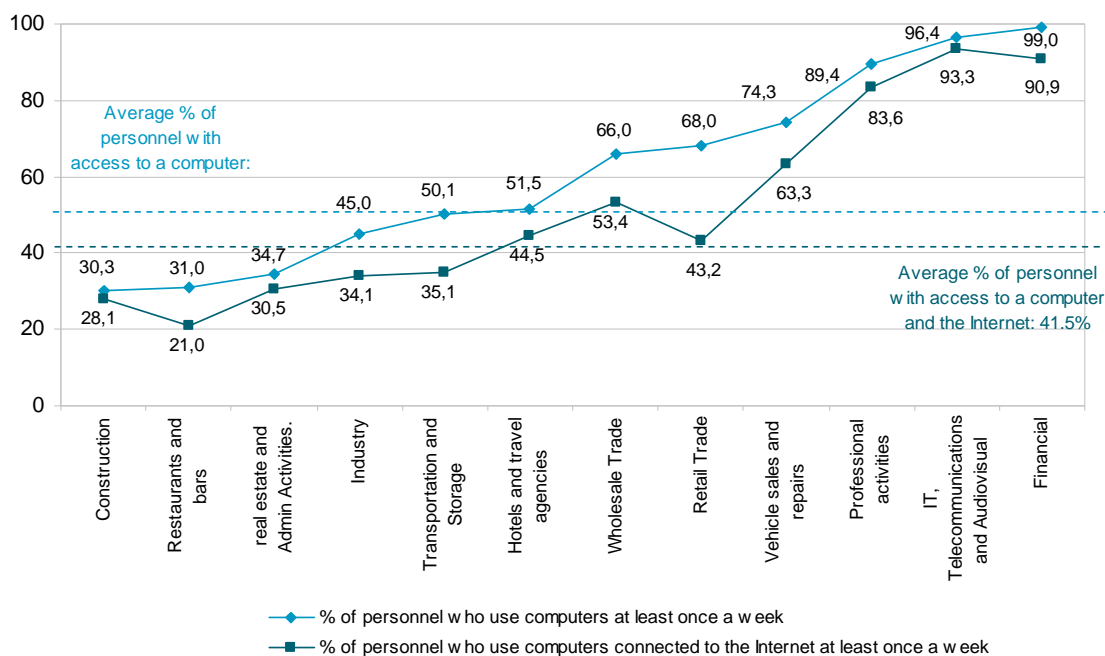*Source: ONTSI using data from the INE 2009*

As infrastructures and connectivity vary greatly according to the sector to which the company belongs, the use of these infrastructures also depends on the sector in which the company carries out its main activity. Generally speaking, a directly proportional relationship can be seen between the level of equipment and the level of use, meaning that in sectors with low computer penetration, Internet access, e-mail or broadband connection, the extent to which these are used by employees is also low.

As has been shown above, construction and restaurants and bars belong to the sectors with lower levels of ICT penetration. The following graph shows that in these two cases the use of computers by company employees is lower than in the other sectors analysed.

**In the case of financial sector companies, 99% use computers, and 93% of IT, telecommunications and audio-visual sector companies have Internet connection**

At the same time, sectors with a high penetration of ICT equipment and connectivity (IT, telecommunications and audio-visual services; financial or professional activities) are also among those that make greater use of these. In fact, in both IT, telecommunications and audio-visual activities and the financial sector, the percentage of computers in use and computers connected to the Internet is higher than 90%.

**Figure 12. Personnel who use computers and computers with Internet access at least once a week, by sector**



Average % of personnel with access to a computer:

Average % of personnel with access to a computer and the Internet: 41.5%

| | Construction | Restaurants and bars | real estate and Admin Activities. | Industry | Transportation and Storage | Hotels and travel agencies | Wholesale Trade | Retail Trade | Vehicle sales and repairs | Professional activities | IT, Telecommunications and Audiovisual | Financial |
|---|---|---|---|---|---|---|---|---|---|---|---|---|

→ % of personnel who use computers at least once a week

→ % of personnel who use computers connected to the Internet at least once a week

*Base: all employees in companies with 10 or more employees*
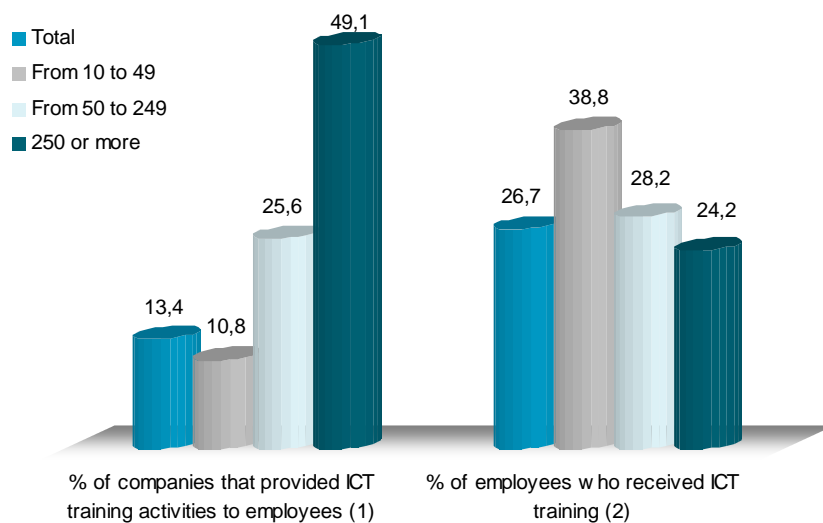
*Source: ONTSI using data from the INE 2009*

The use of ICTs by employees is closely linked to the ICT training provided by businesses. These technologies change rapidly, with new developments being constantly added. This means that in order to make proper and efficient use of these products, employees expected to use them must receive ongoing training.

Major differences in levels of ICT training can be seen according to the size of the company. While in overall terms, 13.4% of SMEs and large companies provide their employees with ICT training, the difference between the percentage of small enterprises (10.8%) and large companies (49.1%) is 39%.

If the analysis focuses exclusively on companies that have provided their employees with ICT training the difference in the percentage of employees receiving this training (14.6%) is not so significant. Furthermore, in this case it can be seen that the greatest percentage of employees trained in new technologies is concentrated in the segment occupied by smaller companies.

**Small businesses provide ICT training to a larger proportion of employees than large companies**
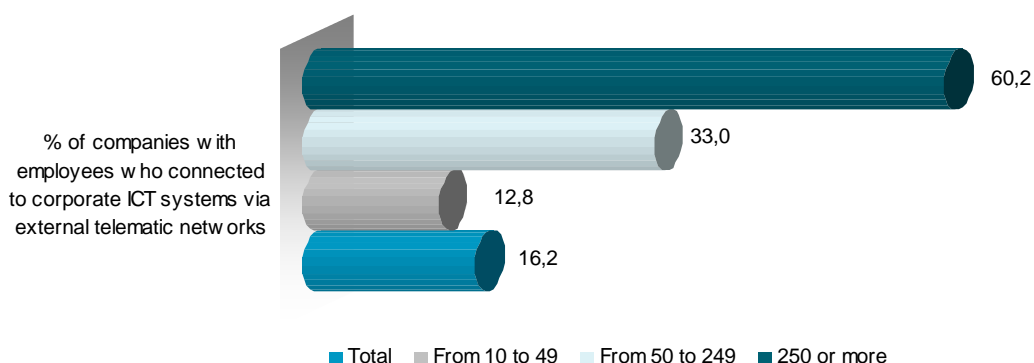
**Figure 13. ICT training for employees**



Legend:
- Total
- From 10 to 49
- From 50 to 249
- 250 or more

% of companies that provided ICT training activities to employees (1): 13,4 / 10,8 / 25,6 / 49,1

% of employees who received ICT training (2): 26,7 / 38,8 / 28,2 / 24,2

*Source: ONTSI using data from the INE 2009*

The incorporation of new technologies into the workplace has significantly helped to reduce limits imposed by space and time. In this regard, one of the most important indicators is connection to external telematic networks enabling operators to work from a remote location. On average, 16.2% of companies have employees who connect to corporate ICT systems using external telematic networks, an increase of 1.5% over the previous year. The increase has been most significant in medium-sized companies, with a difference of two points over the previous year, bringing penetration to 33%.

**Figure 14. Companies with employees who connect to the company's ICT systems via external telematic networks in the course of their work, at least half a working day**



% of companies with employees who connected to corporate ICT systems via external telematic networks:
- 250 or more: 60,2
- From 50 to 249: 33,0
- From 10 to 49: 12,8
- Total: 16,2

Legend: Total / From 10 to 49 / From 50 to 249 / 250 or more

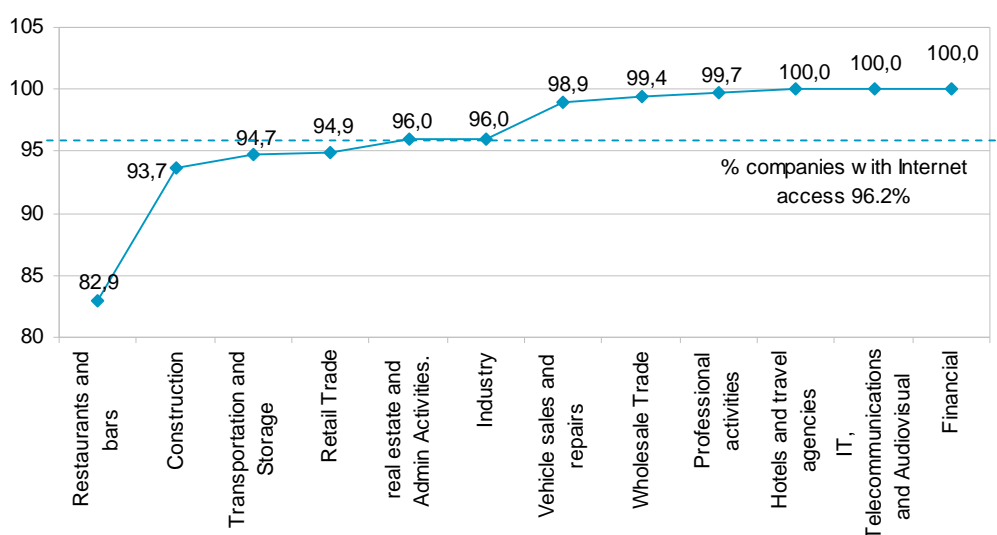*Source: ONTSI using data from the INE 2009*

## 3.3.  Internet

### 3.3.1.  Internet access by sectors

All companies from the following sectors have Internet access: financial, IT, telecommunication and audio-visual activities, hotels and travel agencies. Nearly all companies in the professional activities, wholesale trade, and sale and repair of vehicles sectors have Internet access. Industrial companies and those engaged in real estate and administrative activities, retail

**All sectors have over 80% Internet access penetration**

trade, transport and storage and construction are situated at, or slightly below, the average level (96.2%). A significantly different penetration rate is only seen in the restaurants and bars sector. In spite of this, nearly 83% of companies in this sector have Internet access. This shows that, although there is a certain distance, the levels of penetration of this indicator are high for all sectors.

<div align="center"><span style="color:#1f9fd0"><b>Figure 15. Internet access by sectors</b></span></div>



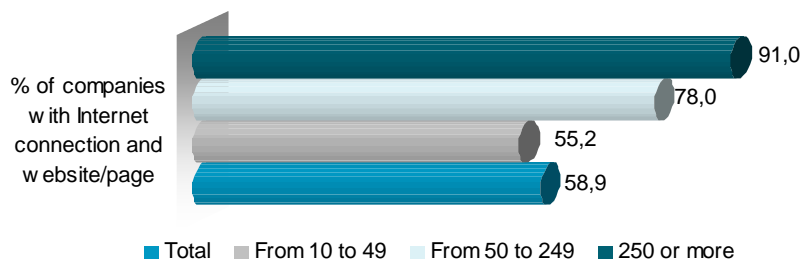*Base: all companies with 10 or more employees*

*Source: ONTSI using data from the INE 2009*

### 3.3.2.  Web page

The availability of a website is increasingly common among SMEs and large companies. Nearly 6 out of 10 companies with Internet access have a website. In spite of web pages being widespread in the business sector, there are differences according to the size of the company. Compared with 91% of companies with

**With regard to medium-sized enterprises, 78% with Internet have their own website, 5 percentage points more than the previous year**

Internet with 250 or more employees , or 78% of those with between 50 and 249 employees, only 55% of companies with between 10 and 259 employees have web pages.

**Figure 16.** Companies with website



% of companies with Internet connection and website/page

91,0
78,0
55,2
58,9

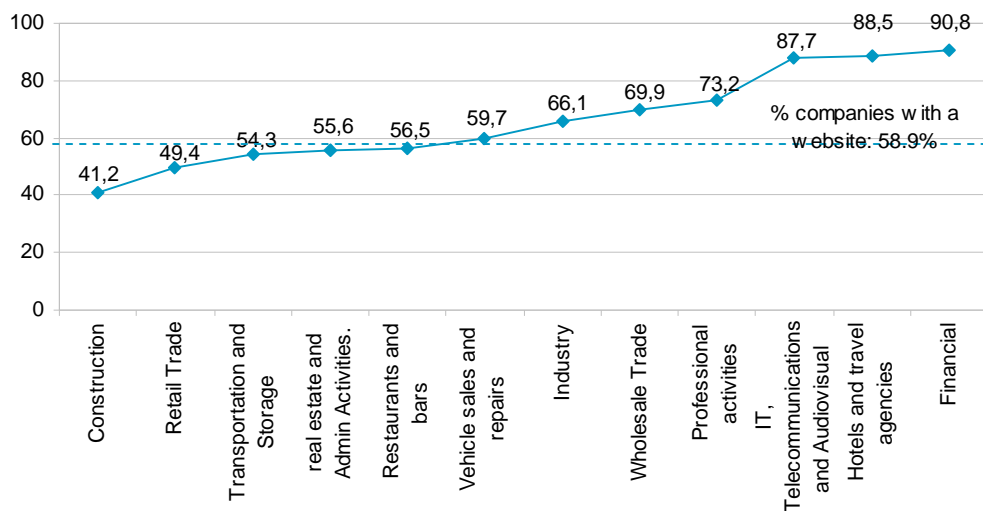■ Total   ■ From 10 to 49   ■ From 50 to 249   ■ 250 or more

*Base: all companies with 10 or more employees with Internet*

*Source: ONTSI using data from the INE 2009*

A sectorial analysis of the availability of websites shows that the same sectors which register a larger number of companies with Internet access also have a higher penetration of companies with their own website, i.e., the financial sector (90.8%), hotels and travel agencies (88.5%) and IT, telecommunications and audio-visual services (87.7%). Restaurants and bars, at the bottom of the Internet access table, have an average number of companies with their own website. In this case, construction companies and retail traders are in the worst position.

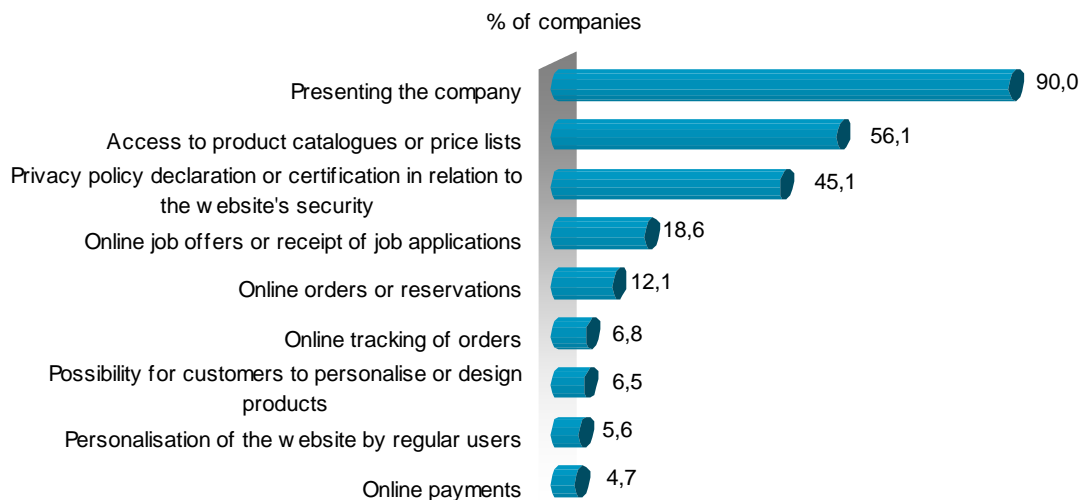**Figure 17. Companies with websites by sector**



% companies with a website: 58.9%

41,2 Construction
49,4 Retail Trade
54,3 Transportation and Storage
55,6 real estate and Admin Activities.
56,5 Restaurants and bars
59,7 Vehicle sales and repairs
66,1 Industry
69,9 Wholesale Trade
73,2 Professional activities
87,7 IT, Telecommunications and Audiovisual
88,5 Hotels and travel agencies
90,8 Financial

*Base: all companies with 10 or more employees with Internet*

*Source: ONTSI using data from the INE 2009*

The pattern of company objectives with regard to creating their own website is the same as the previous year, when the two main objectives were to present the company and provide access to product catalogues and price lists, and the two lesser aims were to enable online payment and website personalisation for frequent users. These positions have been maintained this year. Presenting the company is by far the most important objective pursued by companies creating their

**Of SMEs and large companies with a website, the aim of 90% is to present their company**

own web page, with 90% of SMEs and large companies stating this to be their aim. The second most cited motive (56.1%) is access to product catalogues and price lists. Website personalisation for frequent users and online payments are objectives with far less priority, with 5.6% and 4.7% of companies with 10 or more workers confirming this, respectively.

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**Figure 18. Objectives /services offered on company websites**

% of companies

| Objective | % |
|---|---|
| Presenting the company | 90,0 |
| Access to product catalogues or price lists | 56,1 |
| Privacy policy declaration or certification in relation to the website's security | 45,1 |
| Online job offers or receipt of job applications | 18,6 |
| Online orders or reservations | 12,1 |
| Online tracking of orders | 6,8 |
| Possibility for customers to personalise or design products | 6,5 |
| Personalisation of the website by regular users | 5,6 |
| Online payments | 4,7 |

*Base: companies with 10 or more employees with Internet access and website*

*Source: ONTSI using data from the INE 2009*

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The greatest variety of services are found on the websites of companies dedicated to financial activities and hotels and travel agencies. Hotels and travel agencies lead the field in providing services that enable customers to purchase or book their products, with 67% of companies offering online ordering or booking and 32.3% accepting payment via the Internet. With a different set of objectives, the IT and telecommunications sector is notable for its use of websites to advertise job offers and receive job applications, used in 38% of cases.

**Table 6. Objectives / services offered by company websites by sector**

| % of SMEs and large companies | Total Spain | Industry | Construction | Vehicle sales and repairs | Wholesale Trade | Retail Trade | Hotels and travel agencies | Restaurants and bars | Transportation and Storage | IT, Telecommunications and Audiovisual | real estate and Admin Activities. | Professional activities | Financial |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Presenting the company | 90,0 | 91,9 | 85,3 | 89,7 | 88,8 | 90,0 | 97,6 | 93,2 | 90,8 | 95,4 | 86,2 | 92,5 | 99,8 |
| Privacy policy declaration or certification in relation to the website's security | 45,1 | 40,2 | 34,6 | 53,6 | 42,6 | 50,7 | 68,0 | 38,6 | 45,1 | 66,1 | 50,3 | 58,4 | 86,5 |
| Access to product catalogues or price lists | 56,1 | 63,2 | 34,8 | 68,2 | 68,4 | 54,2 | 90,1 | 62,8 | 41,0 | 67,7 | 48,6 | 45,6 | 77,2 |
| Possibility for customers to personalise or design products | 6,5 | 5,8 | 3,9 | 19,3 | 4,6 | 6,6 | 20,7 | 2,5 | 5,9 | 8,0 | 5,2 | 6,1 | 20,3 |
| Online orders or reservations | 12,1 | 7,9 | 3,0 | 12,3 | 12,4 | 19,3 | 67,0 | 18,1 | 18,3 | 17,0 | 9,1 | 9,4 | 37,1 |
| Online payments | 4,7 | 2,5 | 0,3 | 2,4 | 4,1 | 11,7 | 32,3 | 2,9 | 3,5 | 9,7 | 3,4 | 5,9 | 27,6 |
| Online tracking of orders | 6,8 | 4,5 | 1,7 | 5,7 | 8,0 | 9,3 | 23,6 | 2,8 | 19,6 | 7,5 | 4,2 | 7,9 | 20,2 |
| Personalisation of the website for regular users | 5,6 | 3,8 | 2,4 | 10,0 | 6,6 | 7,6 | 9,6 | 2,6 | 11,2 | 11,4 | 6,3 | 4,9 | 26,1 |
| Online job offers or receipt of job applications | 18,6 | 9,8 | 15,7 | 18,2 | 12,3 | 26,8 | 22,2 | 23,5 | 24,1 | 38,2 | 34,2 | 36,4 | 45,6 |

Intervalos: (% máx - %. mín) / 4 — inferior, medio inferior, medio superior, superior — % mínimo, % máximo

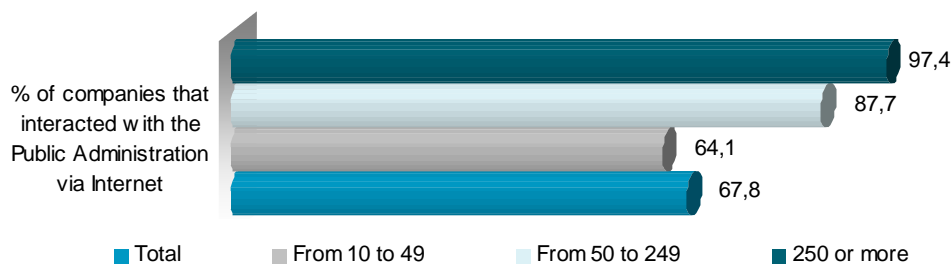*Base: companies with 10 or more employees with Internet access and website*

*Source: ONTSI using data from the INE 2009*

### 3.3.3. Interaction with the public administration

The percentage of companies interacting with the public administration via the Internet is, on average, 67.8% of companies connected to the Internet. Online contact with government administrations is more common among medium-sized and large companies, with over 20 percentage points difference with respect to small enterprises. With regard to companies interacting with the public administration, 97.4% of companies with 250 or more employees and 87.7% of companies with between 50 and 249 do so via the Internet, while the percentage of small enterprises in the same situation stands at 64%.

**Over 97% of large companies and nearly 87% of medium-sized businesses contact the public administration via telematic means**

**Figure 19. Companies that interact with the public administration via the Internet**



% of companies that interacted with the Public Administration via Internet

- 97,4
- 87,7
- 64,1
- 67,8

■ Total   ■ From 10 to 49   ■ From 50 to 249   ■ 250 or more

*Base: all companies with 10 or more employees with Internet*

*Source: ONTSI using data from the INE 2009*

The two reasons for interacting online with the public administration are to obtain information and forms; these are the same as last year. In the first case, 62% of SMEs and large companies assert this to be their reason for engaging in contact, with 61.3% stating the second to be their motive.

Online contact with the administration is mainly one way, meaning that the most common formalities carried out over the Internet are the least sophisticated processes, as these require only a single stage of contact. The percentage of online procedures requiring more than one online contact for completion is lower. Returning completed forms and complete electronic management are the reasons alleged by 48.2% and 45.4% of companies, respectively, nearly 14 percentage points difference with the most widely confirmed motives. Nevertheless, two-way interaction between the public administration and companies has increased over the past year.
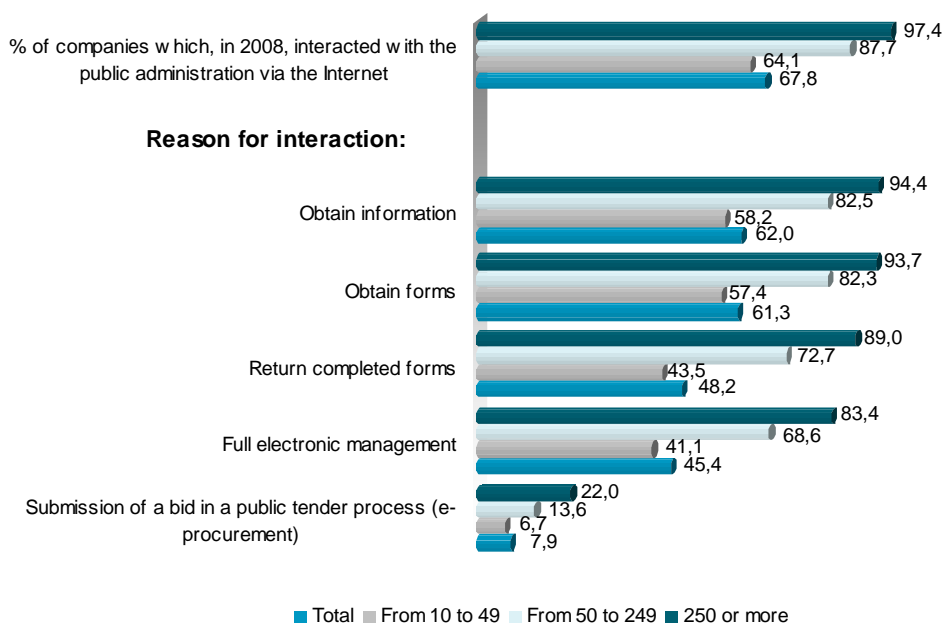
**More than 60% of companies with 10 or more employees use the Internet to obtain information or forms from the public administration**

**Internet gains ground in public tenders**

Submission of bids for public tenders is the least frequent motive, with nearly 8% of SMEs and large companies, representing an increase of around 3 points with respect to the previous year. In all, 22% of companies with 250 or more employees put their commercial products out to tender over the Internet.

The general trend observed is that Internet as a means of contact is more widely used by large companies than by small enterprises, which seem to prefer more conventional methods in their dealings with the public administration.

**Figure 20. Type of online interaction with the public administration**



Base: all companies with 10 or more employees with Internet

*Source: ONTSI using data from the INE 2009*

The financial sector makes a more extensive use of e-administration than others, with more than 90% of SMEs and large companies interacting with the administration online. Other sectors where these figures exceed 80% are, in order of importance, professional activities (83.6%) and IT, telecommunications and audio-visual activities (81.7%). At the

**The financial sector, largest and most sophisticated e-administration user**

bottom end of the scale are restaurants and bars, which have the least online contact with the administration, with more than 18 points difference with the sector immediately above it.

Another fact worthy of note is that the financial sector not only stands out for the high percentage of companies accessing these services, but also because it is the sector where most two-way processes are carried out. In fact, it has the highest percentage of complete electronic management systems or return of completed forms.

IT, telecommunications and audio-visual enterprises, together with professional services, also make extensive use of the Internet in their dealing with public agencies. The IT, telecommunications and audio-visual activities sector is responsible for posting the highest number of public tenders online (15.7%).

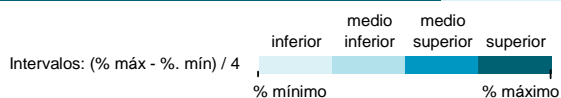## Figure 21. Companies that interact with the public administration via the Internet, by sector
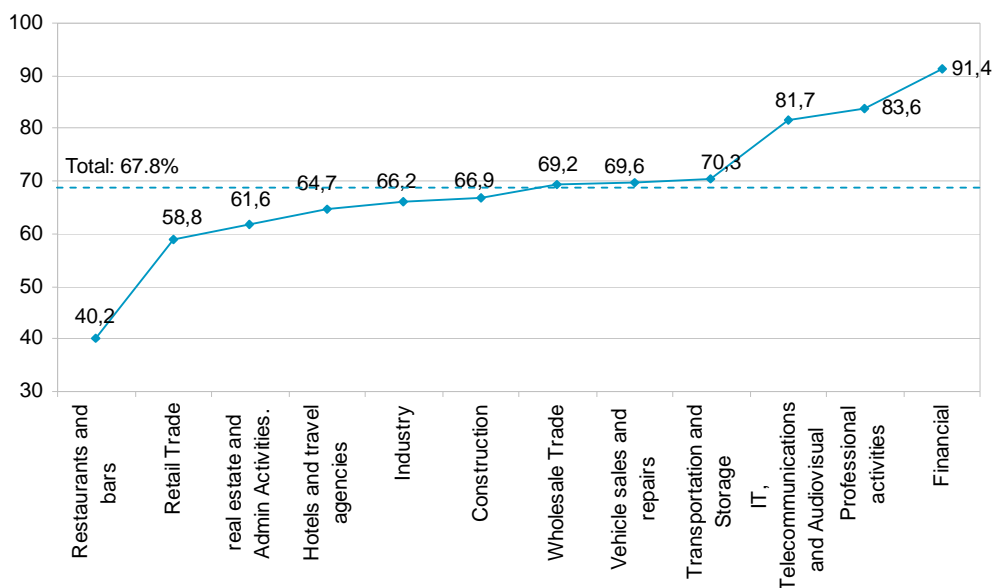


Base: all companies with 10 or more employees with Internet

*Source: ONTSI using data from the INE 2009*

## Table 7. Type of online interaction with the public administration, by sector

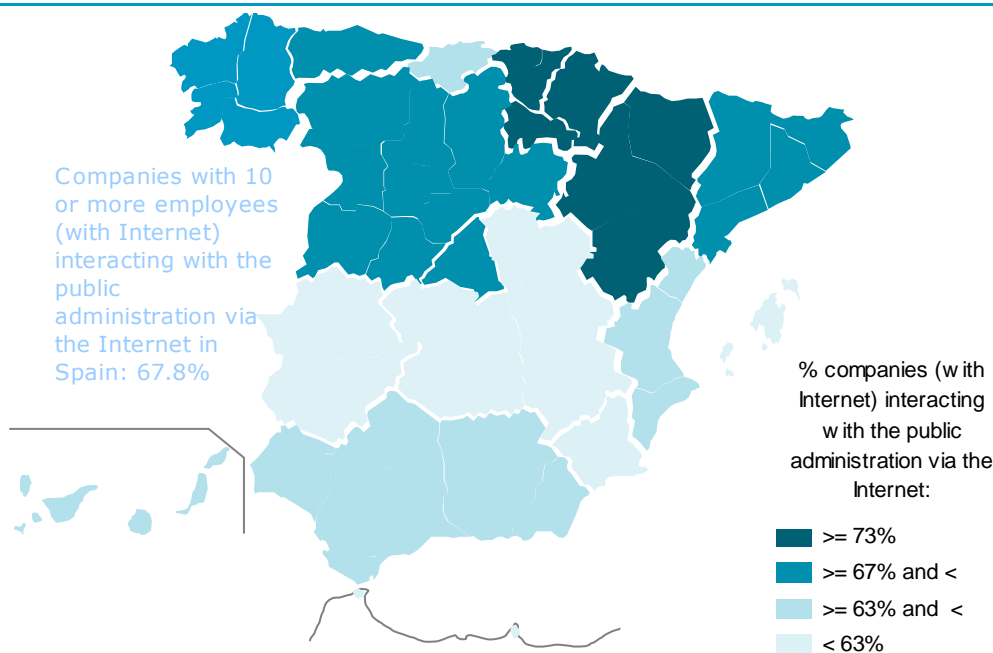| % of SMEs and large companies | Interaction with the eAdministration | Type of interaction | | | | |
|---|---|---|---|---|---|---|
| | | Obtain information | Obtain forms | Return completed forms | Full electronic management | (e-procurement) |
| **Total companies** | 67,8 | 62,0 | 61,3 | 48,2 | 45,4 | 7,9 |
| Industry | 66,2 | 59,6 | 59,4 | 49,2 | 45,9 | 8,0 |
| Construction | 66,9 | 62,1 | 61,5 | 41,9 | 39,7 | 8,6 |
| Vehicle sales and repairs | 69,6 | 63,6 | 62,6 | 49,5 | 49,4 | 5,6 |
| Wholesale Trade | 69,2 | 61,8 | 60,6 | 51,7 | 49,0 | 6,3 |
| Retail Trade | 58,8 | 52,6 | 49,7 | 42,4 | 39,7 | 5,1 |
| Hotels and travel agencies | 64,7 | 59,0 | 58,5 | 48,2 | 45,0 | 5,6 |
| Restaurants and bars | 40,2 | 34,6 | 34,8 | 25,6 | 24,7 | 4,5 |
| Transportation and Storage | 70,3 | 64,4 | 64,4 | 48,1 | 47,1 | 6,3 |
| IT, Telecommunications and Audiovisual | 81,7 | 77,3 | 75,1 | 56,4 | 57,3 | 15,7 |
| real estate and Admin Activities. | 61,6 | 57,3 | 57,4 | 44,8 | 42,3 | 6,4 |
| Professional activities | 83,6 | 78,6 | 78,1 | 69,4 | 61,8 | 11,8 |
| Financial | 91,4 | 84,7 | 87,2 | 81,3 | 80,3 | 6,0 |

Intervalos: (% máx - %. mín) / 4

inferior — medio inferior — medio superior — superior

% mínimo — % máximo

Base: all companies with 10 or more employees with Internet

*Source: ONTSI using data from the INE 2009*

Classified according to autonomous regions, La Rioja is the only region where the percentage of SMEs and large companies maintaining online contact with the public administration nears the 80% mark (79.7%). Navarre, next on the list, reaches 76.8%, while Aragon and the Basque Country are the two other regions in the leading group, with 73.2% and 74.4%, respectively.

**Figure 22. Percentage of companies that interact with the public administration via the Internet, by AR.**



Companies with 10 or more employees (with Internet) interacting with the public administration via the Internet in Spain: 67.8%

% companies (with Internet) interacting with the public administration via the Internet:

- >= 73%
- >= 67% and <
- >= 63% and <
- < 63%

*Base: all companies with 10 or more employees with Internet*

*Source: ONTSI using data from the INE 2009*

### 3.3.4.    IT security

Following a rapid decrease in IT security issues, the percentage of SMEs and large companies experiencing some kind of security problem over the past 12 months has stabilised at 12.6%. The reduction of over 7 percentage points, or between 5 and 4 points in recent years, gives way to a slight increase of less than one and a half points.

Irrespective of company size, the main problem is computer viruses, worms or Trojan horses affecting 12.1% of all companies with Internet access. The frequency of all other problems is very low; only 1% of companies have experienced unauthorised access to their computer system or data and 0.5% have experienced financial fraud (e.g. phishing).

**Figure 23. Evolution of the percentage of companies encountering security problems in the last twelve months**
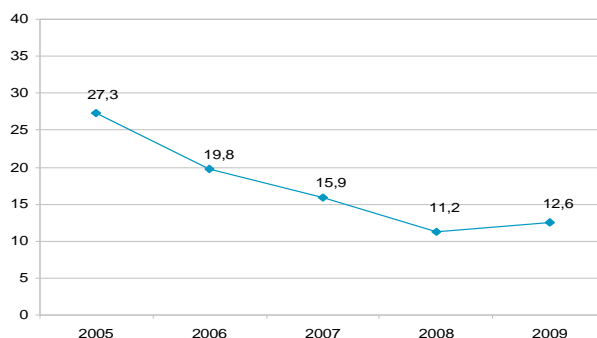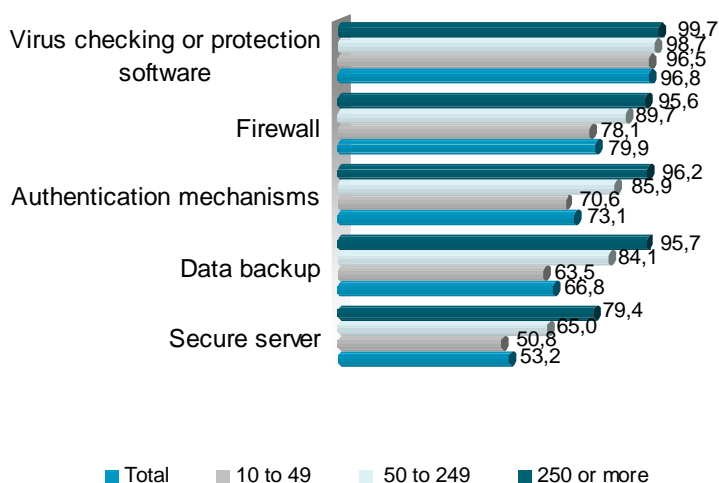


*Base: companies with 10 or more employees with Internet access*

*Source: ONTSI using data from the INE 2009*

Installing security measures to protect computers against this kind of problem is a growing priority in the business sphere, where nearly all companies have protection or antivirus software installed. Specifically, these measures are adopted by an average of 97% of companies with 10 or more employees, with 99.7% and 98.7% in the case of large and medium-sized companies, respectively. Firewalls and authentication software are equally common, with around 80% and 73% of companies using these measures. Data backup or secure servers are the least used. In these two latter cases, the size of the company is the greatest differentiating factor.

**Figure 24. Percentage of companies using internal security services, by type of service**



*Base: companies with 10 or more employees with Internet access*

*Source: ONTSI using data from the INE 2009*
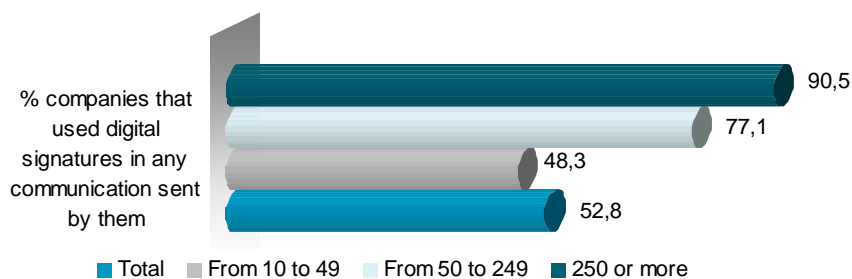
## 3.4.  e-Business

Due to the essential role of ICTs in business transactions, e-business merits a separate chapter. New technologies are used in a variety of ways in this field, showing that companies are increasingly facilitating and transforming their business processes, both with regard to internal and productive management and also in their relationship with their clients, suppliers and the main agents in their field.

### 3.4.1.  Digital signature

A total of 53% of companies with Internet use digital signatures[3] in some kind of communication with external agents, nearly 3 percentage points above last year's figures. Large companies with 250 or more employees do not only make the most extensive use of digital signatures (90.5%), but are also the group that has most increased use of the same in a single year, with nearly 8 percentage points difference. In the case of medium-sized and small businesses the percentages of use are 77.1% and 48.3% respectively, a 5.3% and 2.8% increase over the previous year.

**Over 90% of large companies use digital signatures**

---

**Figure 25. Companies using digital signature**



% companies that used digital signatures in any communication sent by them

- 90,5
- 77,1
- 48,3
- 52,8

■ Total  ■ From 10 to 49  ■ From 50 to 249  ■ 250 or more

*Base: companies with 10 or more employees with Internet access*
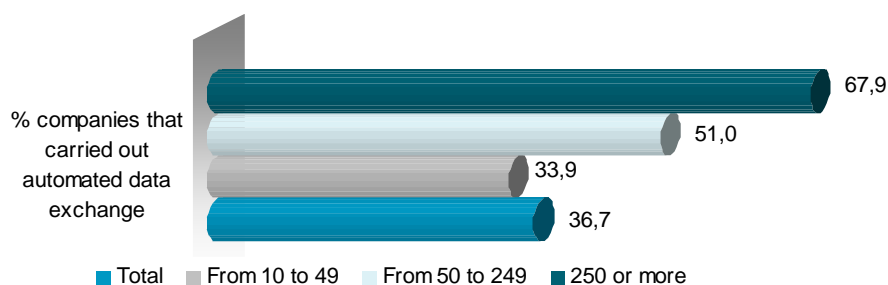
*Source: ONTSI using data from the INE 2009*

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A total of 94% of companies with 10 or more employees who used digital signatures at some time did so in their dealings with the public administration, and to a far lesser degree (17.3%) in their contacts with suppliers or clients. These same differences in use are maintained in the three types of companies analysed, and depend on the number of employees in each case.

---

[3]Digital signature: Encrypted information that identifies the author of an electronic document and authenticates his or her identity. It is unique and specific to the user or computer, as in the case of manual signatures.

### 3.4.2. Automated data exchange with external ICT systems

A total of 36.7% of companies with more than 10 employees use automated data exchange [4] with other external ICT systems. Breaking down the figure according to company size shows that 33.9% of small enterprises have used automated data exchange, a figure which rises to 51% and 67.9% in the case of medium-sized and large companies.

**Figure 26. Companies engaging in automated data exchange with external ICT systems**



*Base: all companies with 10 or more employees*

*Source: ONTSI using data from the INE 2009*

The main reason for using automated data exchange is to send payment instructions to banks. Over 75% of companies using this service do so for this purpose. Another two objectives are to exchange information with the public administration (60%) and to send or receive information on products (57.4%). Around 40% correspond to sending or receiving documentation concerning transport and reception of e-invoices. Around 20% correspond to sending e-invoices, sending orders to suppliers and receiving orders from clients.

**Banks are the main addressees of companies using automated data exchange**

---

[4] Automated data exchange between the enterprise and other external ICT systems consists of exchanging information (e.g. orders, invoices, payment transactions or product descriptions) over the Internet or other computer networks in an agreed format that enables automated processing (e.g. XML[4], EDIFACT[4], …). Electronic mail written manually is not included under automated data exchange.

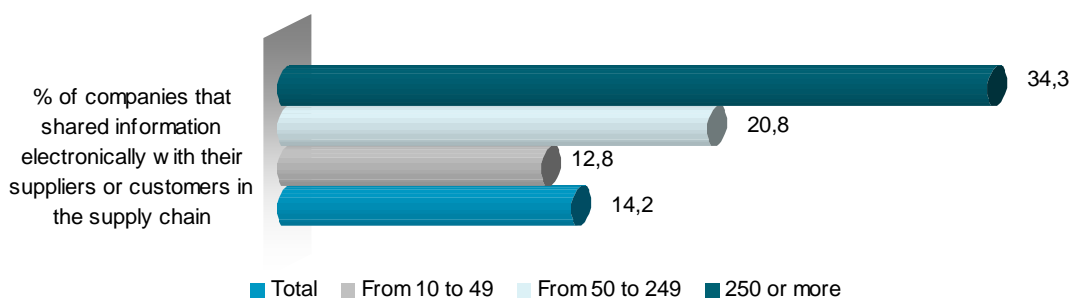**Figure 27. Type of automated data exchange with external ICT systems, according to the purpose of the communication**

% companies

| | |
|---|---|
| Sending of payment instructions to banking institutions | 75,5 |
| Automated information exchange with pub. admin. | 60,0 |
| Sending or receiving information about products | 57,4 |
| Sending or receiving documentation about transport, remittances or deliveries | 42,9 |
| Receipt of electronic invoices | 41,0 |
| Sending of electronic invoices | 23,1 |
| Sending of orders to their suppliers | 21,5 |
| Receipt of customer orders | 17,0 |

*Base: companies with 10 or more employees who perform automated data exchange with external ICT systems*

*Source: ONTSI using data from the INE 2009*

### 3.4.3. Electronic exchange of information with suppliers and customers

Companies with 250 or more employees at 34.3% are those that most share electronic information with suppliers or clients. This figure, together with 20.8% of companies with between 50 and 249 employees, and 12,8% of those with between 10 and 49, gives an average of 14.2% overall for SMEs and large companies. The information is shared over the Internet or other telematic networks.

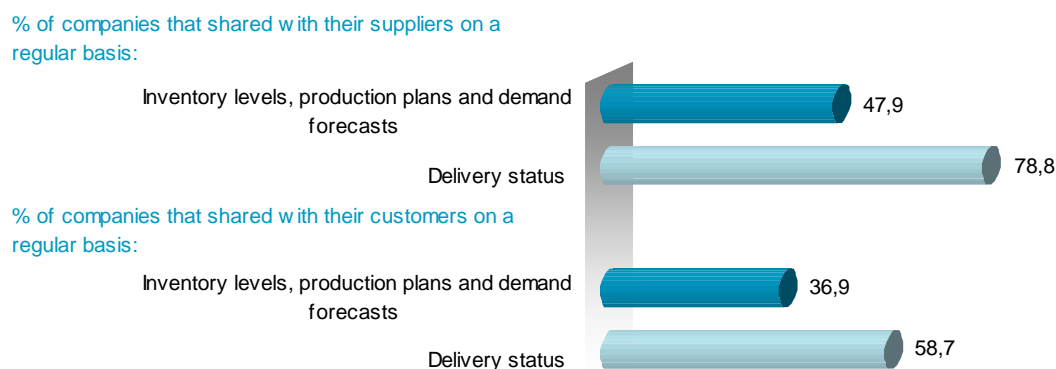**Figure 28. Companies that share information electronically with their suppliers or customers**

% of companies that shared information electronically with their suppliers or customers in the supply chain

| | |
|---|---|
| 250 or more | 34,3 |
| From 50 to 249 | 20,8 |
| From 10 to 49 | 12,8 |
| Total | 14,2 |

■ Total  ▦ From 10 to 49  ▨ From 50 to 249  ■ 250 or more

*Base: all companies with 10 or more employees*

*Source: ONTSI using data from the INE 2009*

The main objective of this exchange is to check the status of orders, both with regard to suppliers and also with clients. A total of 78.8% of companies sharing information with suppliers do so for this purpose. In the case of clients, the percentage is 58.7%. Checking inventories, production plans and demand estimates is the reason for exchanging electronic information with suppliers in 47.9% of cases, and in 36.9% when the exchange takes place with clients.

**Figure 29. Type of information shared electronically with suppliers or clients**



% of companies that shared with their suppliers on a regular basis:

Inventory levels, production plans and demand forecasts — 47,9

Delivery status — 78,8

% of companies that shared with their customers on a regular basis:

Inventory levels, production plans and demand forecasts — 36,9

Delivery status — 58,7

*Base: companies with 10 or more employees who share information electronically with their suppliers or clients*

*Source: ONTSI using data from the INE 2009*

### 3.4.4.   ERP and CRM tools

ERP[5] (Enterprise Resource Planning) tools for sharing information on purchases and sales with other operational areas of the company (for example, finance, organisation, marketing) are present in 19.1% of companies.

With regard to CRM[6] applications used to manage client information (Customer Relationship Management), nearly 25% of companies with 10 or more employees use such applications, around one percentage point higher than the previous year. While the presence of these applications has increased in SMEs and large companies, the number of ERPs has fallen slightly in relation to the previous year, going from 23.2% to the aforementioned 19.1%.

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[5] ERP (Enterprise Resource Planning): Set of computer tools which enable the integrated management of processes and information corresponding to the different business departments within a company. Generally, an ERP system integrates the management of the areas for planning, procurement, logistics, sales, marketing, customer relations, finance and human resources departments.

[6] CRM (Customer Relationship Management) IT tools dedicated to the integrated management of customer information. These applications enable this information to be stored and organised and to be integrated, processed and analysed.

Although CRMs are more common than ERPs, generally speaking, in large companies the latter applications are more widely used. Compared with 47.5% of companies with 250 or more employees with CRM tools, 65.8% of companies use ERP. The same occurs in medium-sized companies where integrated management applications are more commonly found. In smaller companies, however, an important element has been the incorporation of customer management tools.



**Figure 30. Companies with ERP and CRM computer tools**

% of companies with ERP tools for sharing information on purchases/sales with other company departments
- 65,8
- 43,1
- 14,5
- 19,1

% of companies which had some computer application for managing customer information (CRM tools)
- 47,5
- 38,2
- 22,4
- 24,9

■ Total  ■ From 10 to 49  ■ From 50 to 249  ■ 250 or more
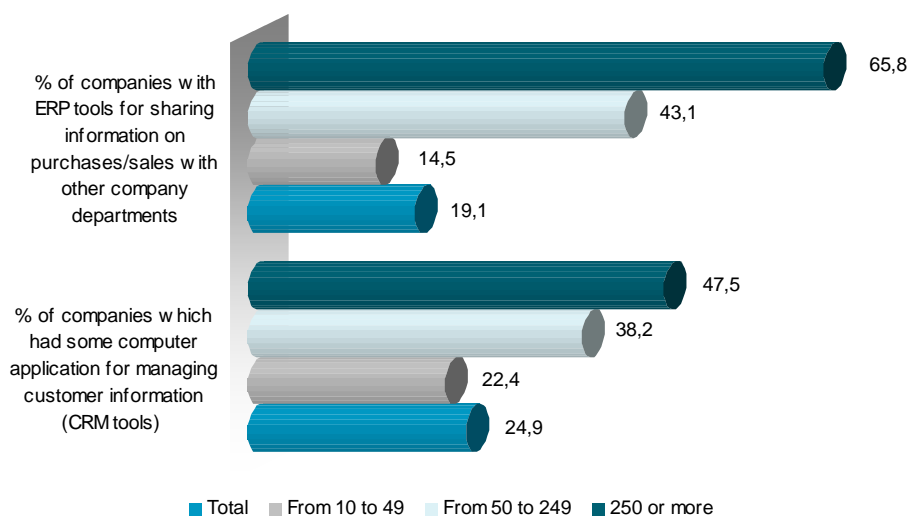
*Base: all companies with 10 or more employees*

*Source: ONTSI using data from the INE 2009*

## 3.5. Electronic commerce

### 3.5.1. Companies that use electronic commerce

Irrespective of size, the percentage of companies making purchases using e-commerce is higher than that of companies selling via this means. On average, 20.3% of companies with 10 or more employees have engaged in electronic purchases, against 11.1% selling products online.

**A total of 20.3% of companies make purchases using e-commerce, compared to 11.1% who sell via this means**

Differences between online selling and buying are greater in smaller companies. In the case of those with 250 or more employees, 5.8% separates the 35% of companies making Internet purchases from the 29.2% selling online. With small enterprises, the difference rises to 9.3%.

Both purchase and sales indicators have maintained a steady trend with respect to the previous year.

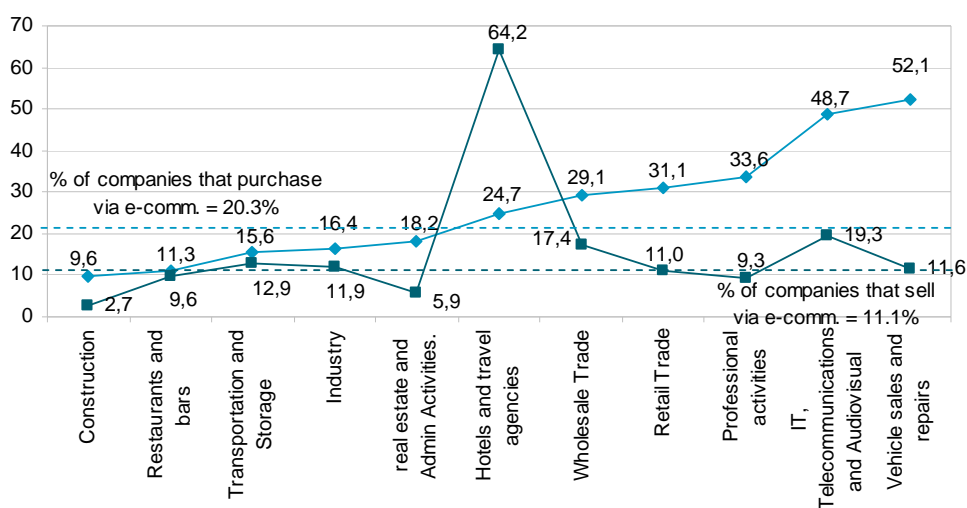**Figure 31. Companies purchasing and selling using e-commerce**



% of companies that have made e-commerce purchases
- 35,0
- 27,2
- 19,0
- 20,3

% of companies that have made e-commerce sales
- 29,2
- 18,1
- 9,7
- 11,1

■ Total　■ From 10 to 49　■ From 50 to 249　■ 250 or more
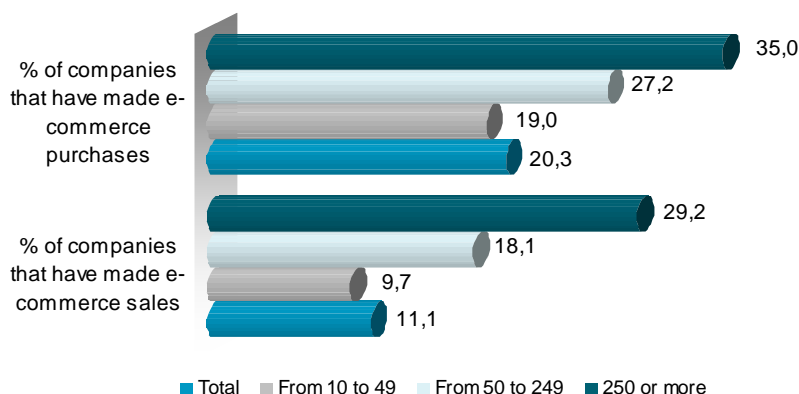
*Base: total number of businesses with 10 or more employees*

*Source: ONTSI using data from the INE 2009*

## Hotels and travel agencies lead the field in e-commerce sales

The sectorial[7] analysis of e-commerce shows hotels and travel agencies to be far ahead of other sectors, and not only has the highest number of companies engaging in e-commerce sales (64.2%), but is also one of the sectors in which this has experienced the most growth, with a rise of over 4 points. This is also the only sector where the percentage of companies selling products via e-commerce is higher than the percentage of companies using the same means for purchases.

**Figure 32. Companies using e-commerce for purchase and sales, by sector**



% of companies that purchase via e-comm. = 20.3%

% of companies that sell via e-comm. = 11.1%

Values (purchase line): 9,6 · 11,3 · 15,6 · 16,4 · 18,2 · 24,7 · 29,1 · 31,1 · 33,6 · 48,7 · 52,1
Values (sales line): 2,7 · 9,6 · 12,9 · 11,9 · 5,9 · 64,2 · 17,4 · 11,0 · 9,3 · 19,3 · -11,6

Sectors: Construction · Restaurants and bars · Transportation and Storage · Industry · real estate and Admin Activities. · Hotels and travel agencies · Wholesale Trade · Retail Trade · Professional activities · IT, Telecommunications and Audiovisual · Vehicle sales and repairs

*Base: all companies with 10 or more employees*

*Source: ONTSI using data from the INE 2009*

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[7] The electronic commerce survey does not include the financial sector

With regard to purchases, companies in the sale and repair of vehicles sector, together with IT, telecommunications and audio-visual services, are the most significant, with percentages of 52.1% and 48.7%, respectively.

### 3.5.2. Importance of e-commerce

Taking into account the total number of companies with 10 or more employees, the percentage of online purchases out of the total number of purchases reaches 13.8%, while the importance of sales stands at 9.6%. If the analysis is focussed exclusively on companies that have used e-commerce, the importance increases significantly, and in the case of purchases, the percentage of this activity out of the total number of purchases is 32.7%, and in the case of sales, 31.2%.

**E-commerce purchases and sales, among companies engaging in this commerce, account for more than 30% of all purchases and sales made**

Figure 33. Amount of e-commerce purchases/sales in all companies vs. amount of e-commerce purchases/sales in companies engaging in e-commerce purchases/sales
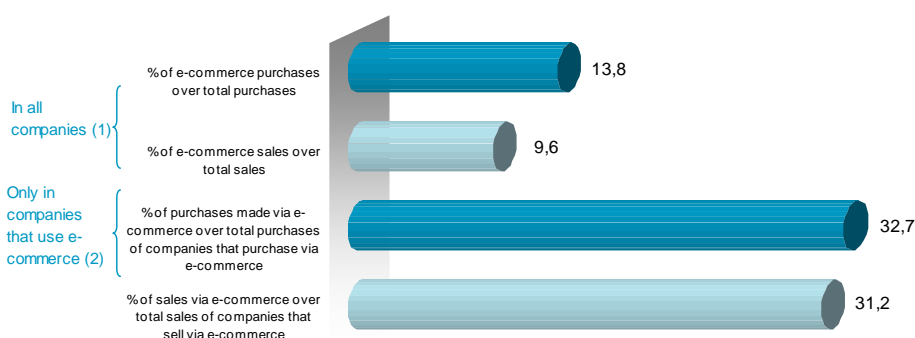


*Base 1: Percentage of the amount of e-commerce purchases/sales out of e-commerce purchases/sales by all companies with 10 or more employees*
*Base 2: Percentage of the amount of e-commerce purchases/sales out of e-commerce purchases/sales by companies with 10 or more employees making e-commerce purchases*

*Source: ONTSI using data from the INE 2009*

On a sectorial level, retail trade and the sale and repair of vehicles are the sectors with the largest e-commerce purchase figures out of all purchases made, reaching values of 37.7% and 34.3%, respectively. Hotels and travel agencies follow these leaders, at a certain distance, with a figure of 23.2%. Construction, on the other hand, is the sector with the least number of e-commerce purchases out of the total number of purchases.

On the sales side, hotels and travel agencies, which is also the sector registering the highest percentage of companies engaging in e-commerce sales, is also the sector with the greatest number of online sales out of the total number of sales made (25.5%). The next sector in line is industry, with 15.2%.

Although the percentage of companies making e-commerce purchases is higher than that of those selling by the same means in almost all sectors, less significant differences exist

with regard to the importance of both purchases and sales out of the total number of purchases and sales. In fact, in several sectors (real estate and administrative activities, transport and storage, industry, and hotels and travel agencies), the importance of sales is greater than that of purchases.

**Figure 34. Amount of e-commerce purchases out of the total number of purchases and amount of e-commerce sales out of the total number of sales, by sector**
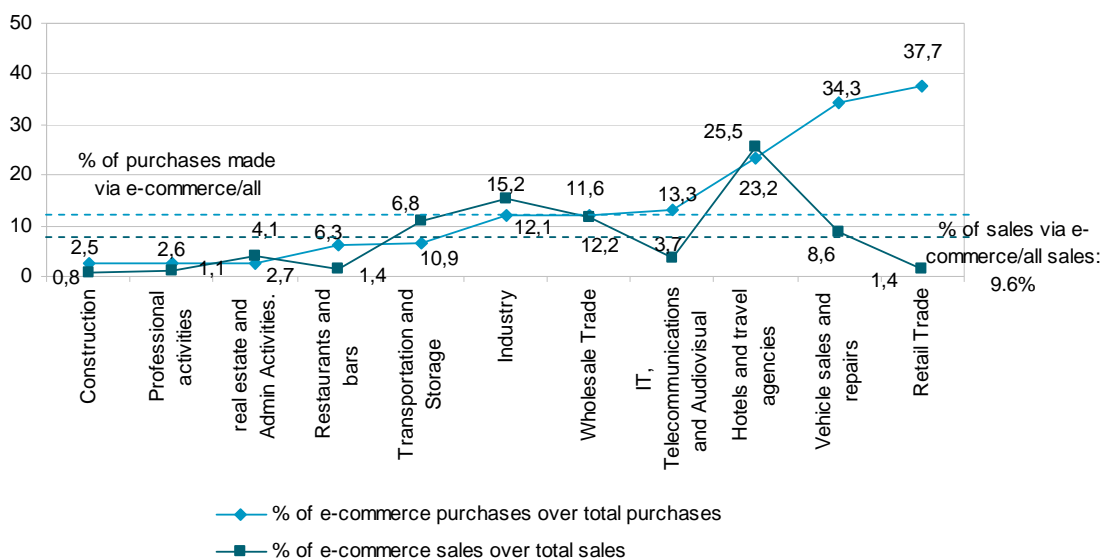
Base: Percentage of the amount of e-commerce purchases/sales out of e-commerce purchases/sales by all companies with 10 or more employees

*Source: ONTSI using data from the INE 2009*

The importance of e-commerce purchases and sales out of the total number of purchases and sales by sector can also be analysed by excluding all companies except those making online purchases or sales. On the side of purchases, the most important sector is that of sale and repair of vehicles, with 65.2%, over 30 points ahead of the average of all sectors. In the case of retail trade and hotels and travel agencies, over half the purchases made by companies using e-commerce to acquire products are made by this means (53.9% and 51.5%, respectively). E-commerce purchases made by construction companies using this means do not even reach 11% of all purchases made.

As far as sales are concerned, the highest percentages out of the total number of sales made by companies which have engaged in e-commerce sales correspond to industry (42.3%) and sale and repair of vehicles (39.6%). In these two cases, the differences with respect to the average importance of all sectors are not as significant as those seen in the case of purchases. In the case of retail trade, IT, telecommunications and audio-visual activities, together with bars and restaurants, the importance of e-commerce sales out of the total number of sales made by companies which have sold using this method does not reach 10%.

In the sectors of construction, professional activities, real estate and administrative activities, transport and storage, industry and wholesale trade, e-commerce sales are

greater than e-commerce purchases. In the remaining sectors the opposite is true, with purchases prevailing over sales.

% of purchases via e-commerce: 32.7%

% of sales via e-commerce: 31.2%

— % of purchases made via e-commerce over total purchases of companies that purchase via e-commerce

— % of sales via e-commerce over total sales of companies that sell via e-commerce
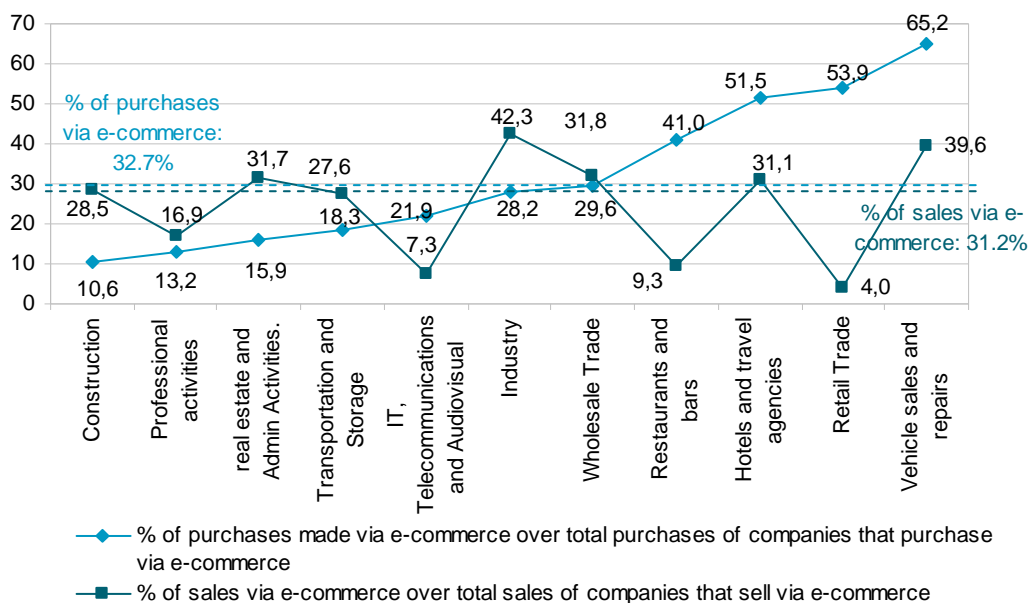
*Base: Percentages of the amount of e-commerce purchases or sales out of purchases or sales in companies of 10 or more employees purchasing or selling via e-commerce, respectively*

*Source:: ONTSI using data from the INE 2009*

### 3.5.3. Distribution of the amount of e-commerce sales according to type of client

Nearly 91% of e-commerce sales were made between businesses (B2B)[8], 7.5% between businesses and end users (B2C)[9] and 1.8% between companies and the government (B2G)[10]. The presence of both end users and the government in e-commerce transactions has increased with respect to the previous year, when B2C sales in companies with 10 or more employees represented 5.5%, and B2G, 1.1%.

**Predominance of B2B, with significant growth of B2C and B2G**

---

[8] Business to Business

[9] Business to Consumer

[10] Business to Government

**Figure 36. Distribution of the amount of e-commerce sales according to the type of customer**
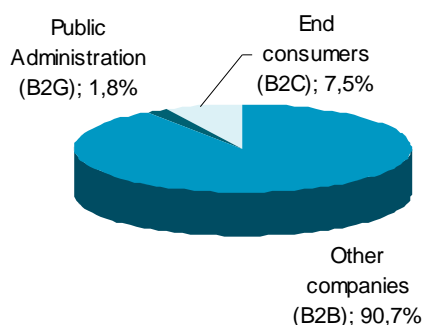
Public
Administration
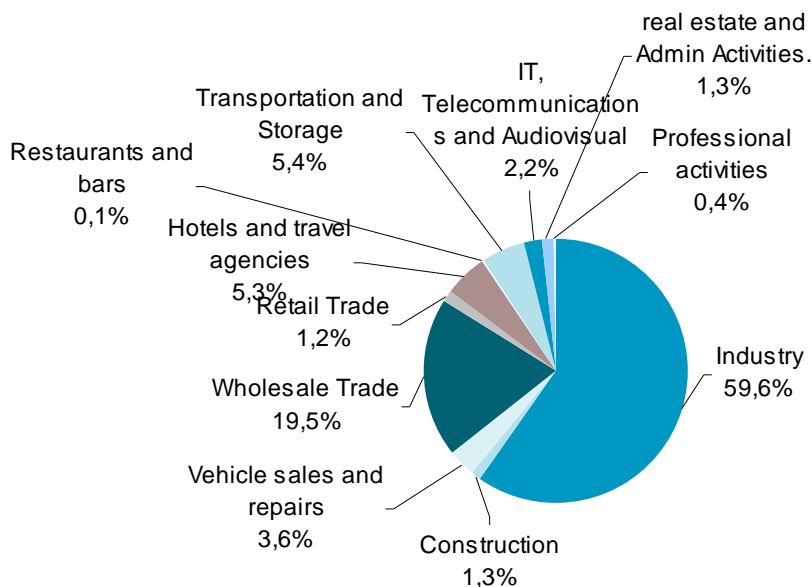(B2G); 1,8%

End
consumers
(B2C); 7,5%

Other
companies
(B2B); 90,7%

*Base: total amount of sales made via the Internet by companies with 10 or more employees*
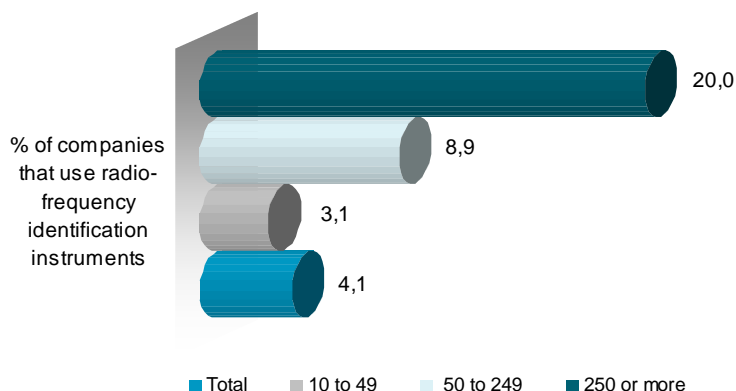
*Source: ONTSI using data from the INE 2009*

The following chart shows the distribution by sector of e-commerce sales, according to the target purchaser. Most cases follow the trend described above, with B2B clearly in the lead, followed by B2C and finally by B2G. Nevertheless, certain sectors do not adhere exactly to this distribution. The case of restaurants and bars, for example, is important due to the fact that nearly 69% of sales are made to consumers, while 30% are made to other companies. In industry, on the other hand, the government is the target of 2.2% of sales, with end users accounting for 1.2%.

In industrial companies, sale and repair of vehicles, professional activities and retail trade, B2B represents over 90%. These cases, in addition to being the most common, are also closest to the average (90.7%). In the remaining sectors analysed the values are lower, above all in that of restaurants and bars (30.2%) and retail trade (47.6%).

End users are particularly important in the case of restaurants and bars (68.4%) and retail trade (52.3%). In industry, sale and repair of vehicles, and professional activities, not even 5% of e-commerce sales are made to end users.

With regard to B2G, professional activities and construction, in that order, are the sectors with the highest percentage of e-commerce sales made to the government.

**Figure 37. Distribution of the amount of e-commerce sales according to the type of customer, by sector**



% of B2B sales:90.7%

% of B2C sales: 7.5%

% of B2G sales: 1.8%

Other companies (B2B): 30,2 · 47,6 · 59,5 · 60,0 · 71,2 · 80,7 · 87,9 · 92,4 · 94,0 · 95,6 · 96,6
End consumers (B2C): 68,4 · 52,3 · 37,4 · 38,5 · 27,1 · 19,0 · 9,0 · 6,7 · 2,7 · 3,9 · 2,2
Public Administration (B2G): 1,4 · 0,1 · 3,0 · 1,5 · 1,7 · 0,3 · 3,1 · 0,9 · 3,2 · 0,5 · 1,2

Sectors: Restaurants and bars · Retail Trade · IT, Telecommunications and Audiovisual · Hotels and travel agencies · Transportation and Storage · real estate and Admin Activities. · Construction · Wholesale Trade · Professional activities · Vehicle sales and repairs · Industry

— Other companies (B2B)   — Public Administration (B2G)   — End consumers (B2C)

*Base: total amount of sales made via the Internet by companies with 10 or more employees*

*Source: ONTSI using data from the INE 2009*

In monetary terms, and excluding the financial sector, industry concentrates around 60% of e-commerce sales, followed by wholesale trade, with 19.5%. With the exception of transport and storage and hotels and travel agencies, where percentages stand at 5.4% and 5.3%, the remaining sectors do not reach 5%. This monetary distribution of e-commerce sales follows the same trend as the previous year.

**Around 60% of the total of e-commerce sales is concentrated in industry**

**Figure 38. Distribution of the amount of e-commerce sales according to sector**



Restaurants and bars 0,1%
Transportation and Storage 5,4%
IT, Telecommunications and Audiovisual 2,2%
real estate and Admin Activities. 1,3%
Professional activities 0,4%
Hotels and travel agencies 5,3%
Retail Trade 1,2%
Wholesale Trade 19,5%
Vehicle sales and repairs 3,6%
Construction 1,3%
Industry 59,6%

*Base: total amount of sales made via the Internet by companies with 10 or more employees*

*Source: ONTSI using data from the INE 2009*

# 3.6.  Use of Radio Frequency Identification technology (RFID)

Use of RFID[11] technology is closely linked to the size of the company. The greater the number of employees, the greater the percentage of companies using this identification technology. The average number of companies with 10 or more employees using RFID is 4.1%, nearly 16 below that of companies with 250 or more employees using the same technology. In those with between 50 and 249 employees, and in those with between 10 and 49, percentages stand at 8.9% and 3.1%, respectively.

**In total, 20% of large companies use RFID technology**

---

[11] (RFID: Radio Frequency Identification). RFID technologies are an automatic identification system for the remote storage and retrieval of data through devices called RFID transponders or identification tags. An RFID tag is a device that can be incorporated into a product or object to transmit information by radio-frequency.

**Figure 39. Use of Radio Frequency Identification technology (RFID)**

% of companies that use radio-frequency identification instruments

20,0
8,9
3,1
4,1

■ Total   ■ 10 to 49   ■ 50 to 249   ■ 250 or more

*Base: all companies with 10 or more employees*

*Source: ONTSI using data from the INE 2009*

**Transport and storage companies make the most use of RFID**

Companies engaged in transport and storage activities, 12.2%, are the only businesses using RFID technology in over 10% of cases. The financial sector, IT, telecommunications and audio-visual services account for 8.2% and 7.5%. Only 1.4% of hotels and travel agencies, together with construction sector companies, have installed radio frequency identification technology.

**Figure 40. Use of Radio Frequency Identification technology (RFID), by sectors**

companies using RFID 4.1%

| Sector | Value |
|---|---|
| Hotels and travel agencies | 1,4 |
| Construction | 1,4 |
| Restaurants and bars | 1,7 |
| Professional activities | 2,3 |
| real estate and Admin Activities. | 2,5 |
| Vehicle sales and repairs | 3,2 |
| Industry | 4,8 |
| Retail Trade | 5,0 |
| Wholesale Trade | 6,2 |
| IT, Telecommunications and Audiovisual | 7,5 |
| Financial | 8,2 |
| Transportation and Storage | 12,2 |
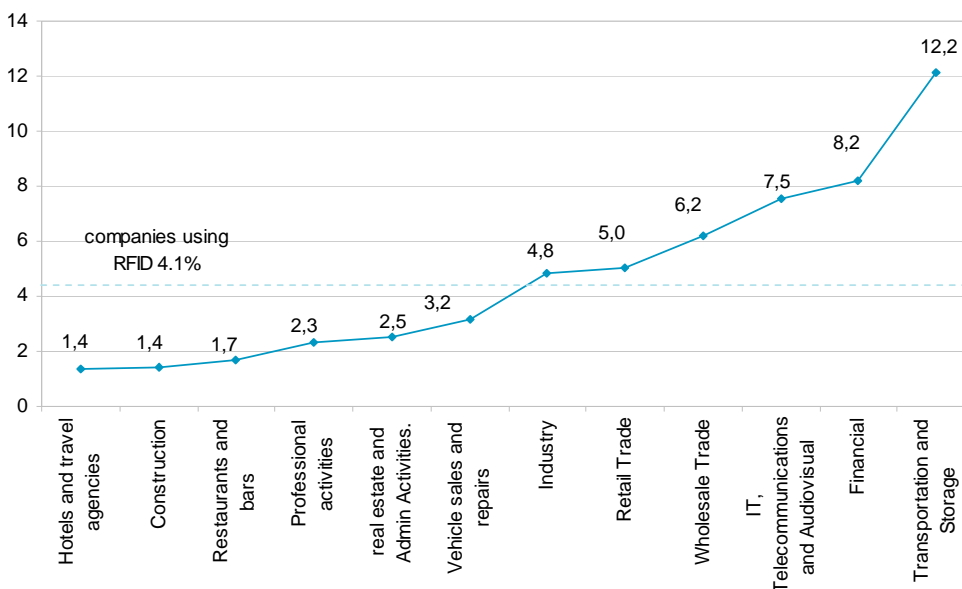
*Base: all companies with 10 or more employees*

*Source: ONTSI using data from the INE 2009*

The reason for using RFID technology varies according to the size of the company. In fact, the pattern of use is practically reversed. In large companies, the two main uses of RFID are monitoring and control of the supply chain and inventories, identification of people, or access control.

## Figure 41. Use of Radio Frequency Identification technology (RFID)

% companies

| | |
|---|---|
| Monitoring and control of the supply chain and inventories | 44,4 |
| Identification of individuals or access control | 40,5 |
| Watch and monitor production | 33,6 |
| Identify the product | 31,2 |
| Payment systems (e.g. motorway tolls, passenger transport) | 29,6 |
| Service and information maintenance management, asset management | 24,2 |
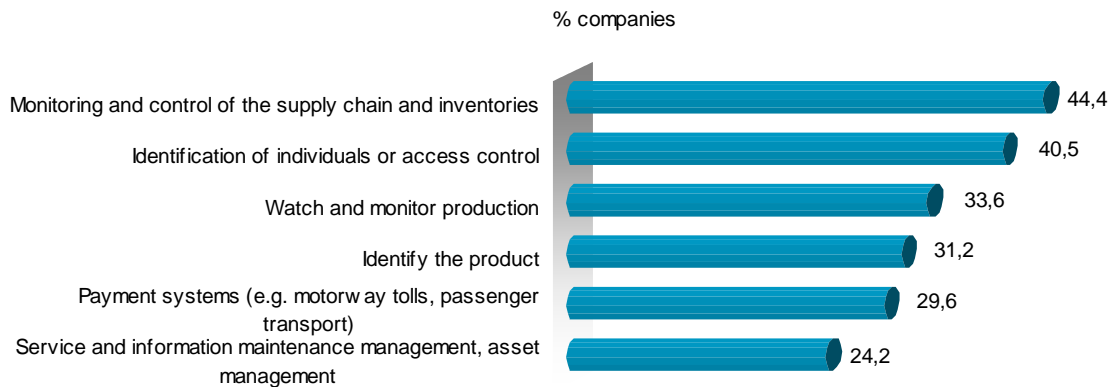
*Base: total number of companies of 10 or more employees using RFID technologies*

*Source: ONTSI using data from the INE 2009*

# 4. SURVEY TECHNICAL SPECIFICATIONS

## Statistics source

Tables of the Survey on the Use of Information and Communication Technologies and Electronic Commerce Use in Companies 2009, carried out by the INE (National Statistics Institute of Spain) and supplied to Red.es through a collaboration agreement.

## Sample

Companies with 10 or more employees: 19,436 companies

## Demographic scope

Population formed by companies whose main activity is described in sections C, D, E, F, G, H, I, J, classes 64.19, 64.92, 66.12 and 66.19 and in groups 65.1 and 65.2 of section K, section L, divisions of 69 to 74 of section M and section N according to the National Economic Activity Classification (CNAE-2009). In other words, the sectors analysed are manufacturing industry, supply of electricity, gas and water, construction, wholesale and retail trade, sale and repair of motor vehicles and motorcycles, transportation and storage, hotel and catering, information and communications, financial and insurance activities, real estate activities, scientific and technical professional activities and administrative activities and auxiliary services.

## Territorial scope

Spain (Detailed analysis by Sector and Autonomous Region)

## Date of fieldwork

The information concerning ICT infrastructures and use was compiled in the first quarter of 2009 while the reference period for electronic commerce is December 2008.

# 5.  LIST OF FIGURES AND TABLES

## Figures

## Tables