



**Central State Administrative Office for e-Croatia**

**Study on Information Society  
Developments in Croatia in 2005**



**IDC Adriatics**

October 2006

## Foreword

**Scope of the Study:** The primary objective of this study for the Central State Administrative Office for e-Croatia is to provide an understanding of the relative position of Croatia regarding the development of an information society benchmarked against European Union member countries.

The findings of this study could primarily serve as:

- (1) The prerequisite and a tool for pre-accession talks of Croatia as a candidate country to the European Union.
- (2) The necessary quantitative framework for monitoring and assessing achievements, setting goals and pursuing policies related to the development of the country's information society, for local and international stakeholders.

Following the European Council held in Lisbon in March 2000, EU15 Heads of Governments set a decade development goal for Europe to become "the most competitive and dynamic knowledge-based economy in the world capable of sustainable growth with more and better jobs and greater social cohesion". In response to this call, the eEurope Action Plan was launched in June 2000. In June 2001, 13 candidate countries launched the eEurope+ Action plan to meet this challenge and help accelerate the reform and modernization of their economies during their approach to the Community. The eEurope implementation required the process of benchmarking comprising indicators based on coherent statistical information from the information society domain. To this end, in April 2004, the European Parliament endorsed the regulation No 808/2004 concerning Community Statistics on the Information Society. Based on this regulation, e-Europe 2005: Benchmarking Indicators<sup>2</sup>, a set of 14 policy and 22 supplementary benchmarking indicators along with their taxonomy, research methodology, sources, and collection frequency, was set. On that base, Eurostat, coordinating and in cooperation with relevant bodies in member countries, has regularly made public the actual annual values for these indicators, and corresponding progress reports.

Since enlargement in May 2004, the European Union has assessed and revisited the Lisbon process, giving it a new start under the headline of Growth and Jobs. As the first major initiative under the new Lisbon agenda a strategic document "i2010 – A European Information Society for Growth and Employment"<sup>7</sup>, was made public in June 2005.

It is important to note that only now, as the end of 2006, is such a comprehensive assessment of Croatia's information society development and EU benchmarking being done for the first time. IDC Adriatics believes that this initial research will give the impetus to further efforts in this respect. It should also be pointed out that the work on the study was affected by tight budget and time constraints.

**IDC Approach:** In addressing the assigned task, IDC Adriatics applied the **eEurope 2005 Benchmarking Indicators**, its statistical concepts and practices, including related taxonomy, methodological guidelines, as well as progress reports and relevant Eurostat indicators databases. Particularly, the Eurostat model for a Community Survey on ICT Usage and e-Commerce in Enterprises 2005 was applied in an ICT usage survey of the country's non-financial businesses with a staff of more than 10. In addition, attempts have been made to obtain the needed data from the country's relevant state bodies (ministries, state agencies), and Croatian Telekom. However, the information obtained with few exceptions (Ministry of Science, Education and Sports in the case of primary and secondary education information equipment and Internet connections, and Croatian Agency for Telecommunications for aggregate ADSL Internet usage figures) was incomplete or not provided at all. IDC also consulted all available publicly accessible information sources in this field in the country comprising, among others, Centre for Market Research (GfK), Central Bureau of Statistics of Republic of Croatia (DZS), and Croatian Telecommunications Agency (HAT). Finally, the findings as well as educated guesses on certain issues in this study were founded on the vast knowledge and experience of IDC Adriatics, which has been tracking the Croatian ICT market and industry since 1996.

Detailed explanatory notes, definitions, and methodological notes accompany the policy indicators where further clarification was deemed necessary.

A particular problem regarding the findings of this study stems from the fact that Eurostat collected the 2005 data for the member countries at the beginning of that year (meaning the data reflects the situation in the year 2004), while the 2005 data for Croatia was collected in October 2006 (and reflects data as of year-end 2005). These, of course imply a certain overvaluation of indicators for Croatia, but given the differences in order of magnitudes, IDC believes it does not pose a significant obstacle to benchmarking and conclusions. France and Malta were omitted from the benchmarking due to the lack of data.

**Future Outlook:** The new i2010 document<sup>8</sup>, introducing new aspects to a comprehensive strategy of the ICT and media sector, calls for a revision of the former information society monitoring process, i.e. the assessment/revision of old and supplementing new indicators. Given the pivotal role of growth and employment issues in the new Lisbon strategy, the impact of i2010 should be considered in relation to these objectives. This means linking the ICT sector with the rest of the economy, and looking at the effects of the use of ICT by society at large. To this end, from the indicators aspect, two new indicators have been proposed:

- (1) Share of the ICT sector in the economy as proportion of GDP and of total employment, and*
- (2) Growth of the ICT sector measured as % change of value added expressed in current and constant prices.*

It should be noted in this context that IDC Adriatics anticipated these requirements, applying the rational and mentioned indicators in its analysis of the ICT industry of Slovenia (2003 and update 2005), Macedonia (2004, and update 2005), and Croatia (2004). The project for Croatia was commissioned by Croatian Employers' Association (HUP), and was supported by Central State Office for e-Croatia and Financial Agency (FINA).

**Further Steps:** IDC believes that the further process of monitoring the development of the information society in Croatia is:

- (1) To conform the data collection period with that used by the EU, i.e., to collect the 2006 data in the first half of 2007, and in accordance with the issuance of profit and loss statements of Croatian enterprises by the FINA register.
- (2) To enlarge the research coverage for the enterprises sector to: financial institutions (banks, insurance houses and other financial organizations), companies with 1 to 10 persons employed (some 60,000 organizations), and crafts and freelancers (some 90,000 subjects).
- (3) To institutionalize research on ICT usage by the household sector.
- (4) To develop and launch a regular data collection process in central and local government administration bodies, and the education and healthcare sectors.

(5) To closely follow the changes in the EU information society development monitoring practice, and adopt it instantly.

IDC Adriatics staff, namely Boris Žitnik, project manager and chief analyst, and analysts Igor Križevan and Krešimir Alić, prepared this study.

Our thanks for specific data inputs and suggestions go to Mr. Zoran Paldi from the Ministry of Science, Education and Sports, and Mr. Željko Mihoković from the Croatian Agency for Telecommunications; as well as to Mr. Domagoj Juričić and Mr. Tomislav Vračić from the Central Administrative Office for e-Croatia for their general support.

The work on the study lasted from September to October 2006.



Special acknowledgement goes to FINA that provided the revenues and persons employed data from the profit and loss statements of enterprises under review for the years 2004 and 2005.

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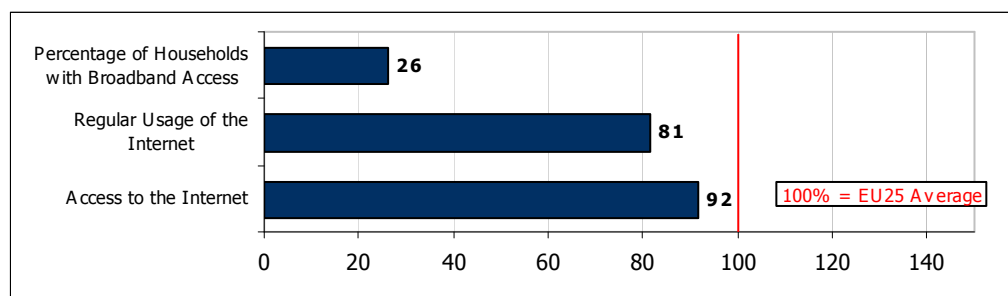
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## Summary

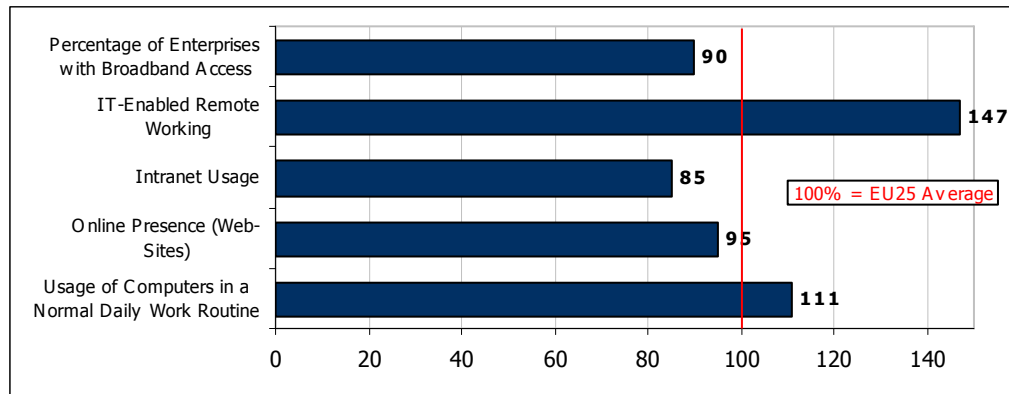
The state of affairs in 2005 concerning the development of the information society in Croatia and its benchmarking with EU25 averages, and particular EU member countries, can be summarized as follows:

- Croatian **citizens** do rather well with regards to Internet usage. The gap to the EU25 average in the case of accessing the Internet is only 4 percentage points, whereas in regular Internet use Croats lag behind the EU25 average by 8 percentage points. When broadband connections are considered, however, the gap becomes substantial – 17 percentage points. IDC believes this is due to the late introduction of broadband technologies into the market, their relatively high prices, as well as lack of localized broadband content.



- The survey of Croatian **non-financial enterprises with 10 or more employees** indicated that they are rather early adopters of ICT technologies, but that they generally do better in adopting these technologies than in using them effectively. Their employees use computers connected to the Internet to a greater extent (39%) than the EU25 average (35%). The situation is even more favorable when considering IT-enabled remote working (that could be attributed to the structure of the economy). At the same time, the employment of Web sites and usage of intranets were below the EU average. Employment of broadband connections lagged as well – by 6 percentage points behind the EU25 average. It should be noted, however, that IDC believes that the situation regarding the said indicators would be far more pessimistic if the vast number of **companies with fewer than 10 employees**, as well as **crafts**, were considered. In contrast is the situation in the **banking/financial** sector. In particular, banks in Croatia lead

in the deployment of ICT technology. All of them implement broadband connections (leased lines), while the online banking services are the flagship of online service activities in the country (similar to m-parking payments).



- Online public services provisioned by the **government administration** sector at the 2005 year-end were still in their early stages of development, implementation, and adoption by both citizens and businesses. Nonetheless, the situation in this respect has been progressing recently. The funds earmarked for government's IT procurements in the state budget increased in 2005 and 2006 by a high 56% and 47%, respectively, with numerous IT projects being launched (HITRO.HR, HITRONet, ePDV, e-REGOS, and Court Case Management System, among others). Nevertheless, and despite the sufficient evidence, IDC believes that the standard of ICT technologies deployment in government administration, as well as broadband penetration, is somewhat lower when compared to the EU average, as well as business and household sectors in the country. This is particularly the case with local government despite the rare success stories of particular towns and municipalities.
- The **education** does generally well when access to the Internet and even its broadband version is considered – practically all education institutions had a broadband connection by autumn 2006. Since September 2005 Croatian Academic and Research Network (CARNet) implemented a series of online services in schools (e.g. provided e-mails for all pupils, deployed a centralized Learning Management System, and launched various online knowledge testing systems). However, the same could not be said for ICT

equipment in schools, as number of PCs per 100 pupils in Croatia still lags behind the European standards. Simultaneously, the situation is even less favorable in terms of effective use of technology, with particular problems being the insufficient ICT training of teachers, as well as slow progression in provision of educational content over these infrastructures.

- The practically non-existing evidence of information society developments in the **healthcare** sector does not allow reliable assessments and benchmarking. The two public online healthcare services referenced in the government's list of online public services have not reached stage 1 as of 2005 year-end. In general, the delayed and prolonged implementation of major ICT technology projects in the healthcare sector suggests that the real progress in that respect is to be expected not sooner than the end of 2006 and subsequent years.

## Internet Indicators

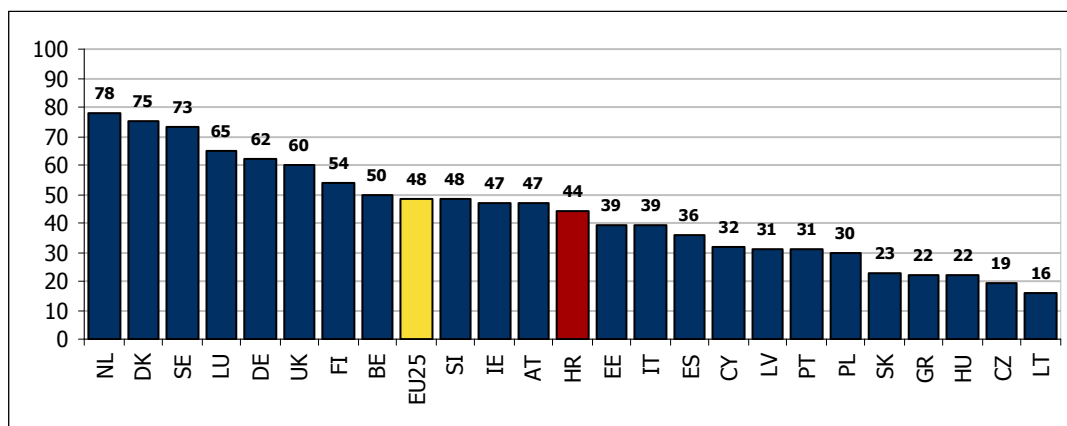
### A. Citizens' Access to and Use of the Internet

#### A.1. Individuals' Use Of the Internet

The first section of this report describes trends related to access and usage of the Internet by Croatian citizens. The figures shown in the text below represent the level of usage recorded at the end of 2005.

Over 2005, number of individuals having the ability to access the Internet from their homes increased only slightly. At year-end, some 44% of the country's population between 16 and 74 had access to the Internet. Despite the slowed growth, Croatia placed only slightly below the average value for 25 countries of the European Union. IDC believes that this indicates that Croatians are highly aware of the importance of Internet usage, which, despite a somewhat lower purchasing power, drives them to purchase personal computers and install access lines.

**Figure A1a: Percentage of Households or Individuals Having Access to the Internet at Home in 2005**



Source: Eurostat for EU Countries, public sources and IDC Adriatics for Croatia, 2006

#### Explanatory Note

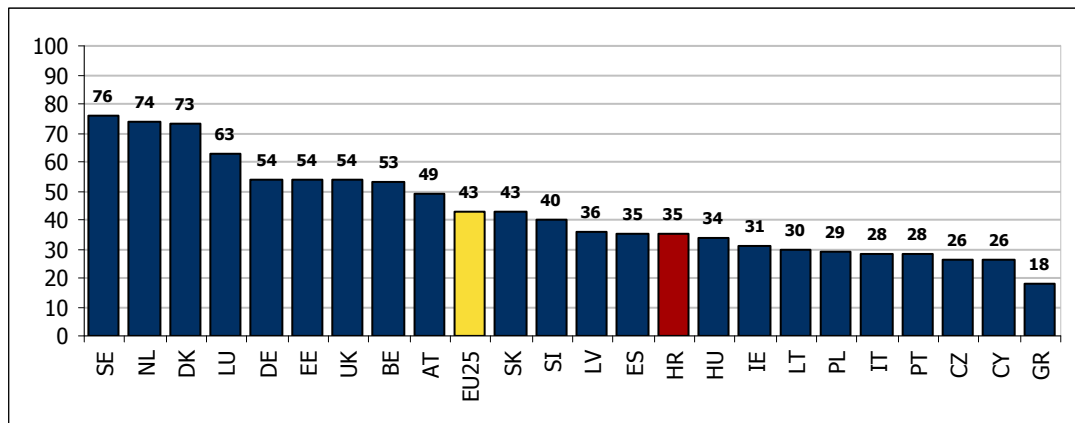
"Access" does not refer to the "connectability" (i.e., can connections be provided in the households' area or street), but to whether anyone in the household could use the Internet at home *if desired*, even if just to send an e-mail.

The sources for data on use of the Internet by citizens in Croatia comprised publicly available information and IDC's own research.

The number of individuals regularly accessing the Internet (at least once per week) also rose quite slowly last year. At the end of 2005, the number of such individuals reached 1.313 million, which was equal to about 35% of the country's total population above the age of 15. This reflects an increase of only two percentage points compared to the end of the year before.

Taking into account the results shown on the chart above, we could conclude that Croatia had a larger share of those having access to the Internet at home but not exercising the opportunity. This could be explained by the fact that older inhabitants of Croatia are quite reluctant to use the Internet compared to their counterparts in EU member states.

**Figure A1b: Percentage of Individuals Regularly Using the Internet in 2005**



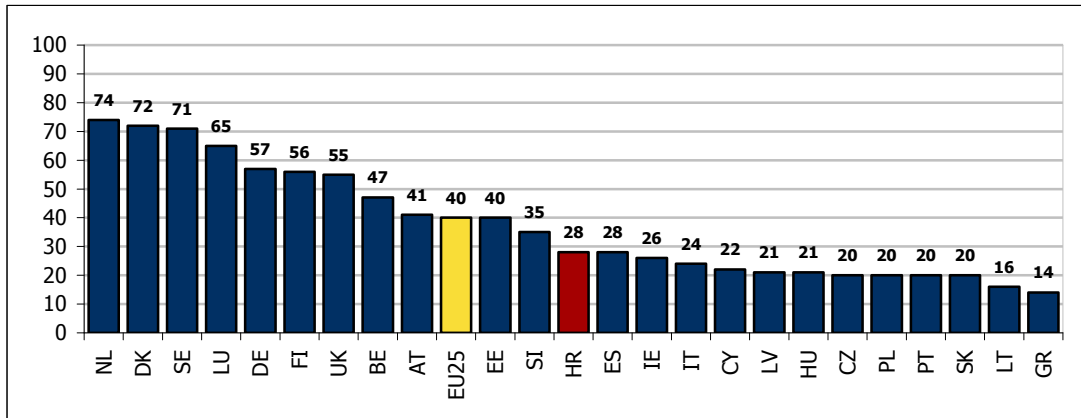
Note: Finland omitted from the figure due to the unavailability of data.

Source: Eurostat for EU Countries, public sources and IDC Adriatics for Croatia, 2006

## A.2. Individuals' Internet Use by Place of Use

Somewhat more than one fourth of individuals accessing the Internet at least once per month did that from their homes. Compared to most new member states, Croatia had significantly higher share of individuals accessing the Internet from home, which confirms the above-mentioned thesis on the relatively high awareness of the Internet usage among Croatian households.

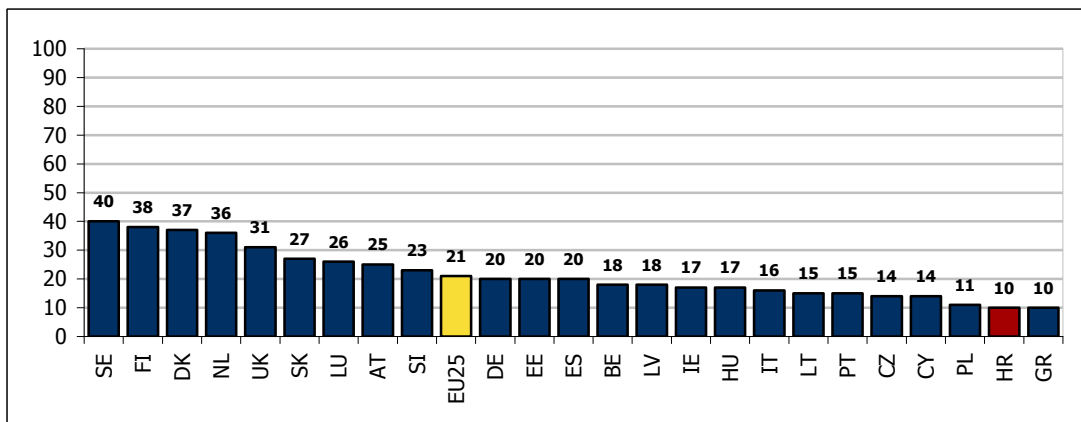
**Figure A2a: Percentage of Individuals with Internet Access Accessing the Internet from Home in 2005**



Source: Eurostat for EU Countries, public sources and IDC Adriatics for Croatia, 2006

Only one tenth of individuals in Croatia accessed the Internet from work, which was more than two times lower than the EU average, and approximately four times lower than in Scandinavian countries.

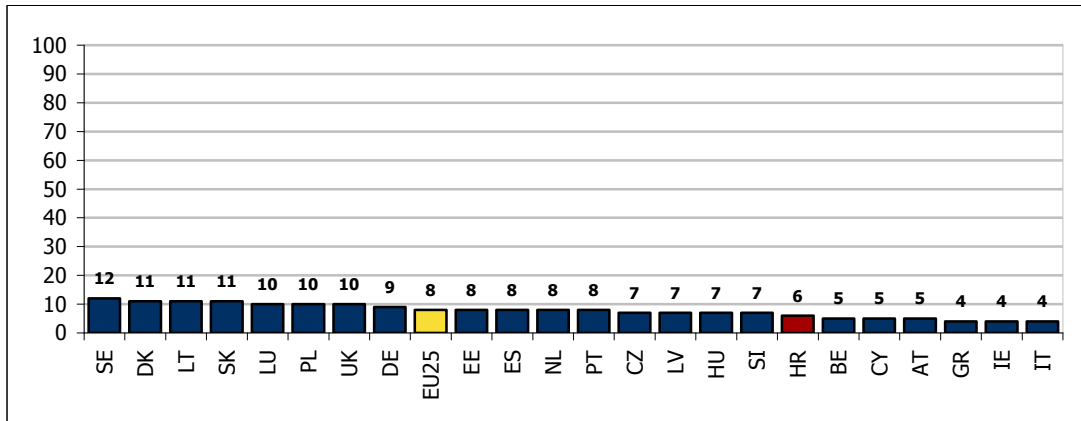
**Figure A2b: Percentage of Individuals with Internet Access Accessing the Internet from Work in 2005**



Source: Eurostat for EU Countries, public sources and IDC Adriatics for Croatia, 2006

The proportion of individuals accessing the global network from places of education stood at 6% in Croatia at the end of last year, which was equal to 75% of the EU average, and twice as lower as in Sweden. It should be noted that, in comparison to Croatia, all new member states had a higher share of individuals accessing the Internet from places of education.

**Figure A2b: Percentage of Individuals with Access to the Internet from Place of Education in 2005**



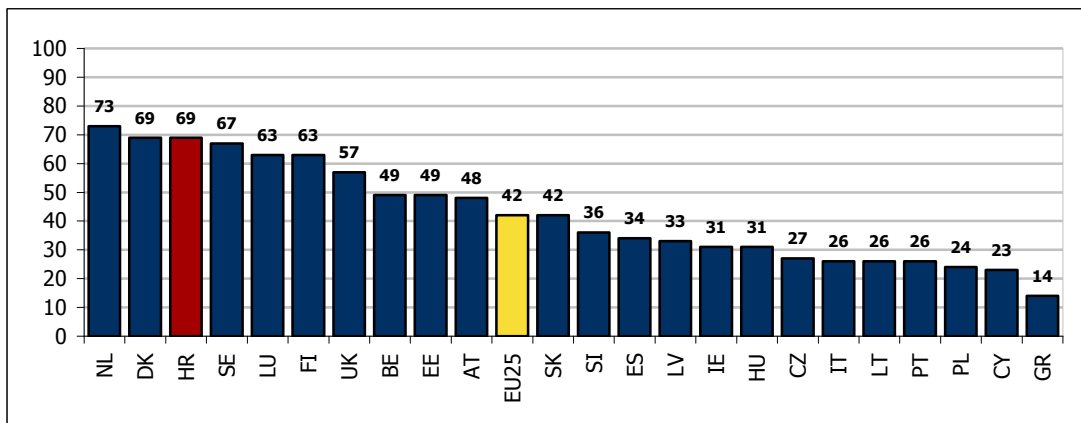
Note: Finland omitted from the figure due to the unavailability of data.

Source: Eurostat for EU Countries, public sources and IDC Adriatics for Croatia, 2006

### A.3. Individuals' Internet Use by Type of Usage

Checking emails, access to daily information, searching Web literature, and games and music downloading were the most important motivation for Croats to access the Internet. Online transactions, such as paying for household expenses, and obtaining information on goods and services were the main driver for 15% and 63% of users, respectively.

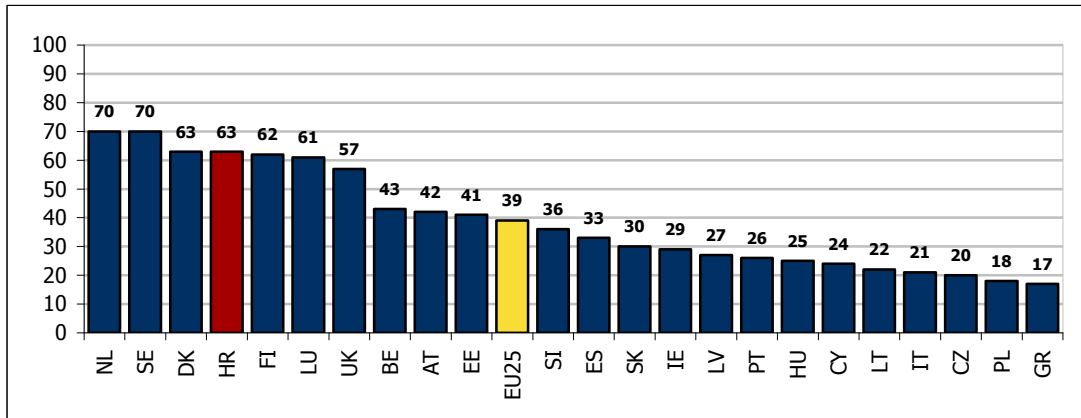
Figure A3a: Percentage of Individuals Using the Internet for Sending/Receiving Emails in 2005



Note: Germany omitted from the figure due to the unavailability of data.

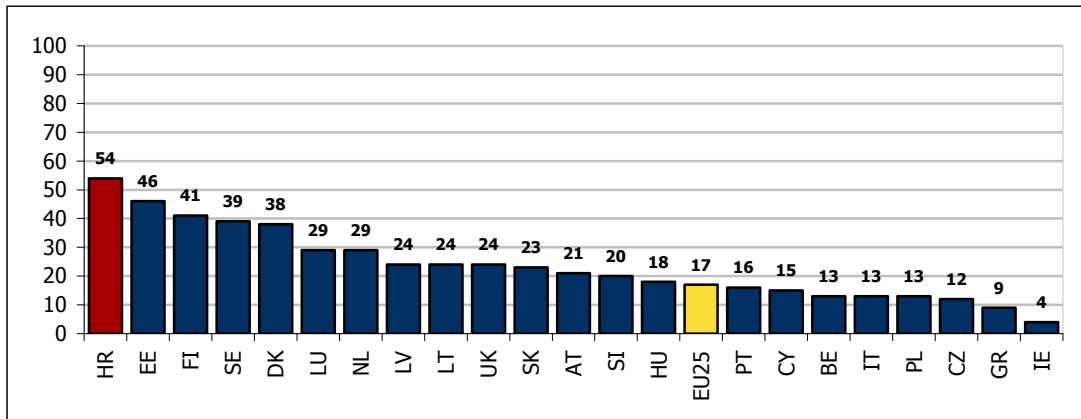
Source: Eurostat for EU Countries, public sources and IDC Adriatics for Croatia, 2006

**Figure A5b: Percentage of Individuals Using the Internet for Finding Information About Goods and Services in 2005**



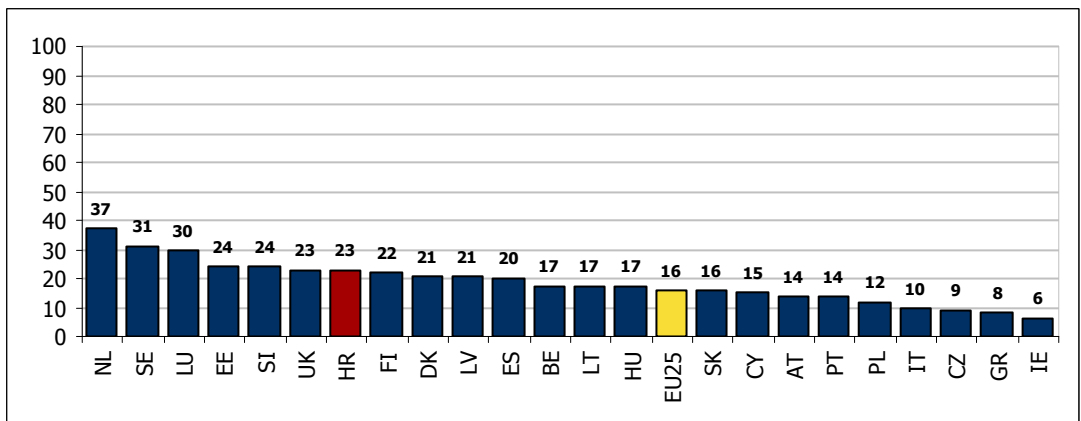
Source: Eurostat for EU Countries, IDC Adriatics for Croatia, 2006

**Figure A5c: Percentage of Individuals Using the Internet for Reading/Downloading Online Newspapers/News Magazines in 2005**



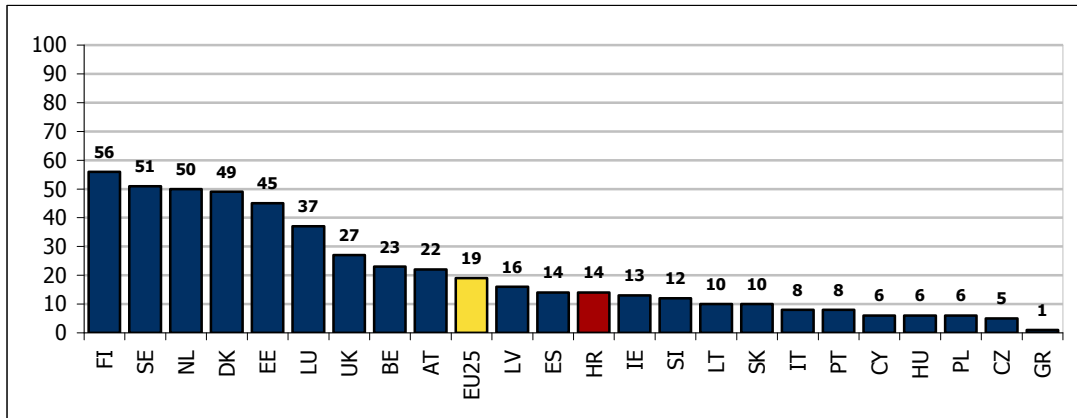
Source: Eurostat for EU Countries, IDC Adriatics for Croatia, 2006

**Figure A5d: Percentage of Individuals Using the Internet for Playing/Downloading Games and Music in 2005**



Source: Eurostat for EU Countries, IDC Adriatics for Croatia, 2006

**Figure A5e: Percentage of Individuals Using the Internet for Financial Services (Internet Banking, Share Purchasing) in 2005**



Source: Eurostat for EU Countries, IDC Adriatics for Croatia, 2006

## B. Enterprises' Access and Use of ICT

For the purpose of this study, IDC Adriatics carried out a survey of non-financial enterprises with more than 10 employees in Croatia, applying an identical questionnaire to that used in EU member countries. Below are the results benchmarked with the appropriate Eurostat policy indicators for EU member countries.

### The Survey

The questionnaire applied was Eurostat model for a Community Survey on ICT Usage and e-Commerce in Enterprises 2005 (Model Questionnaire version 3.1.). The target population was 9,350 Croatian enterprises with 10 and more persons employed from following NACE categories:

Section D: Manufacturing

Section F: Construction

Section G: Wholesale and Retail

Section H: Hotels and Restaurants

Section I: Transportation, Storage and Communication

Section K: Business Services

Section O: Other

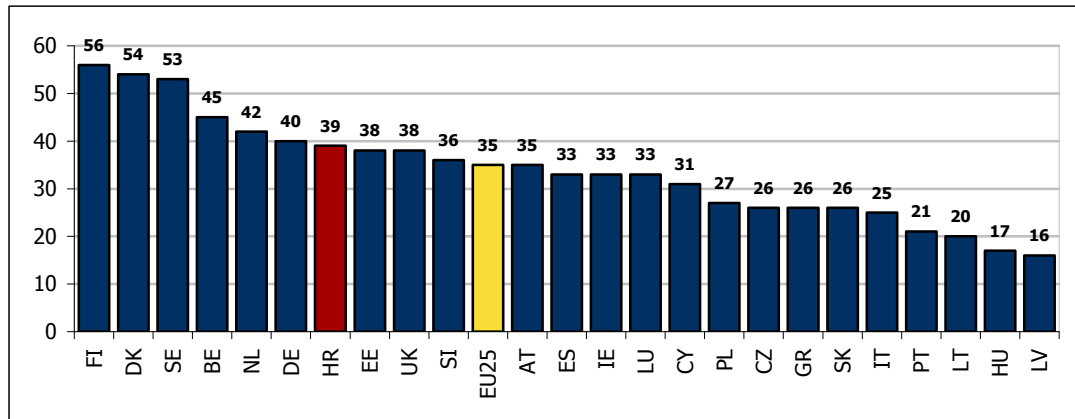
The data was collected by sample survey, using stratified random sampling derived from FINA's company register. The sample was stratified by economic activity and the number of persons employed. The number of strata was 18. The results were weighted by persons employed. A total of 400 companies were interviewed over the telephone.

The sample confidence interval is +/- 4.9%.

With 39% of workers effectively using computers connected to Internet in their normal work routine in 2005, the total of Croatian non-financial companies with more than 10 employees led by 4 percentage points over the EU25 average. Croatian

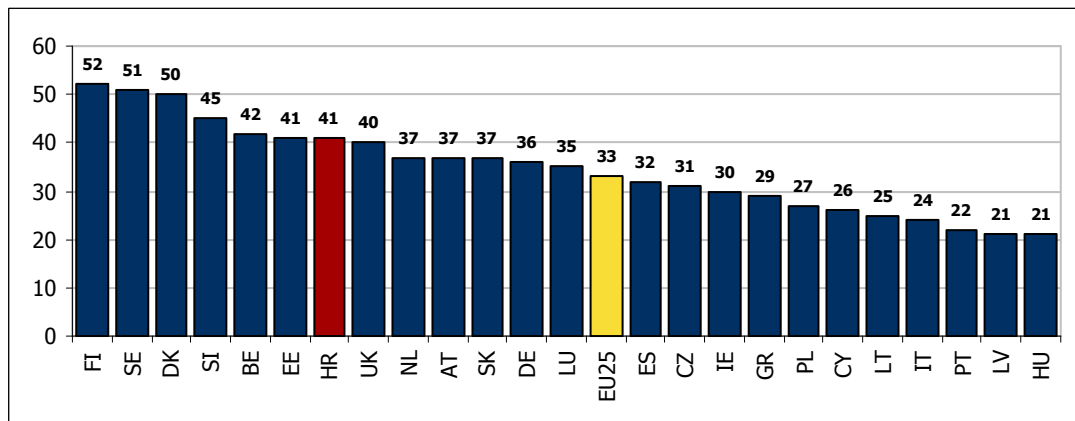
companies were even better positioned when the category of 10-49 workers is considered. In this case this indicator stood at 41% compared to 33% EU25 average. In the 50-249 workers category Croatia almost matches the EU25 average, while in the category of 250+ the gap against Croatian companies to the EU25 average is 2 percentage points.

**Figure B1a: Percentage of Persons Employed Using Computers Connected to the Internet, in Their Normal Work Routine at Least Once a Week in 2005 (Total)**



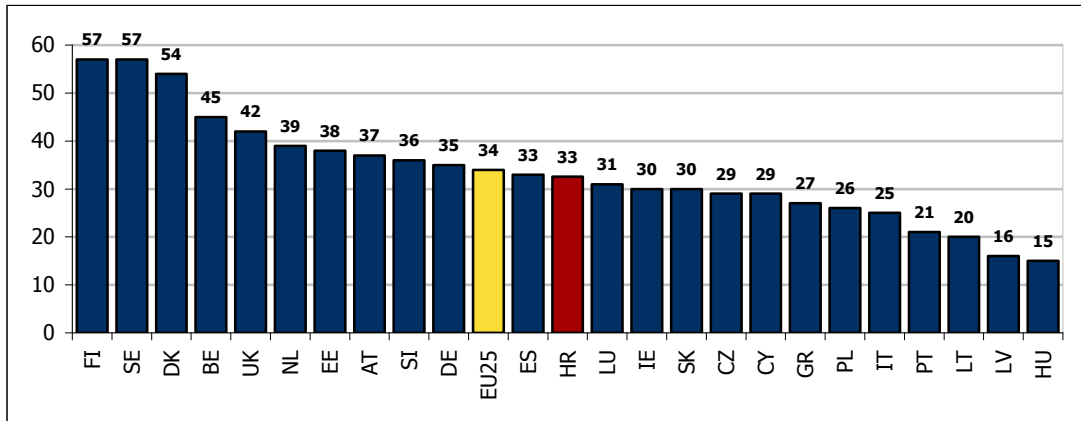
Source: Eurostat for EU Countries, IDC Adriatics for Croatia, 2006

**Figure B1b: Percentage of Persons Employed Using Computers Connected to the Internet, in Their Normal Work Routine at Least Once a Week in 2005 (Companies With 10-49 Employees)**



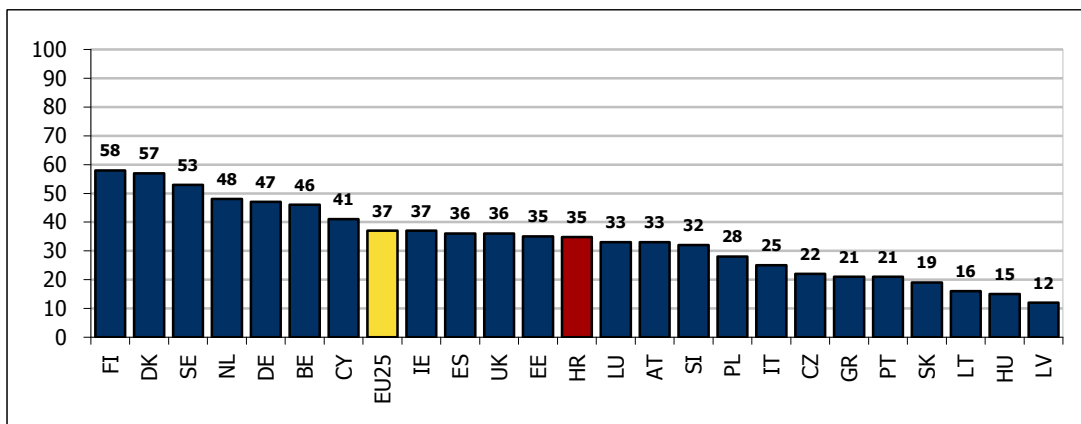
Source: Eurostat for EU Countries, IDC Adriatics for Croatia, 2006

**Figure B1c: Percentage of Persons Employed Using Computers Connected to the Internet, in Their Normal Work Routine at Least Once a Week in 2005 (Companies With 50-249 Employees)**



Source: Eurostat for EU Countries, IDC Adriatics for Croatia, 2006

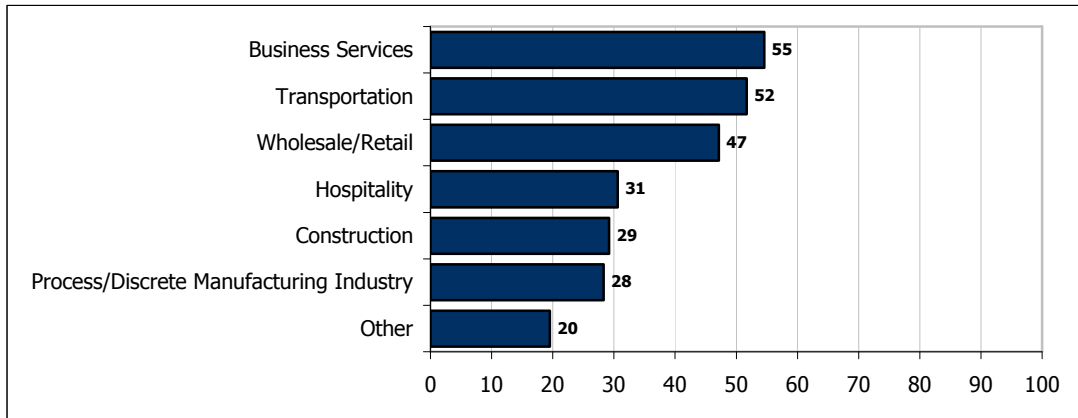
**Figure B1d: Percentage of Persons Employed Using Computers Connected to the Internet, in Their Normal Work Routine at Least Once a Week in 2005 (Companies With 250+ Employees)**



Source: Eurostat for EU Countries, IDC Adriatics for Croatia, 2006

The breakdown by vertical segment in regards to employees' business usage of computers connected to the Internet reveals that business services lead the list of categories reviewed. The transportation segment (which comprises telecommunications as well) is positioned second, followed by the combined wholesale and retail sector. Other reviewed categories were below the recorded country average of 39%.

**Figure B1e: Percentage of Persons Employed Using Computers Connected to the Internet, in Their Normal Work Routine in Croatia in 2005 (According to Vertical Segments)**



Source: IDC Adriatics, 2006

**Explanatory Note**

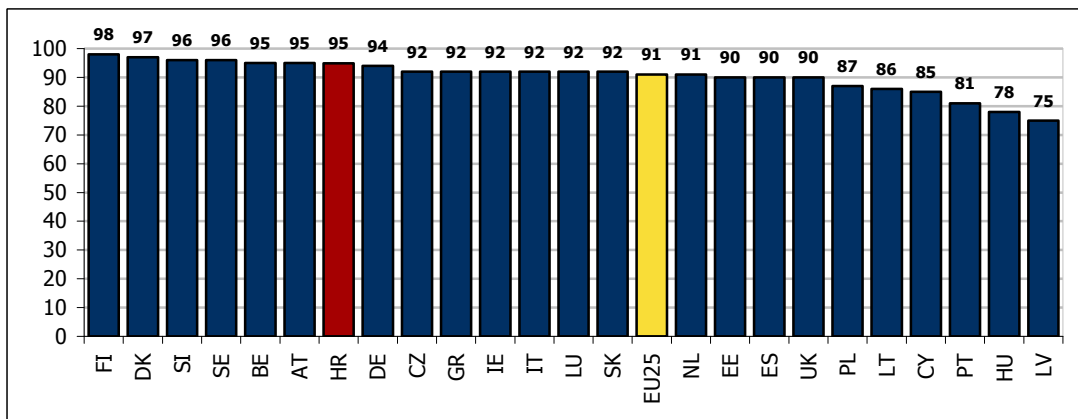
These indicators do not refer to access only, but to the effective use of computers by the personnel in the enterprise activities. It intends also to capture only the relevant use of computers by workers, setting a minimum level of frequency of *at least once a week*.

Computers include supercomputers, mainframes, minicomputers, workstations, and personal computers.

**B1. Enterprises' Access to the Internet**

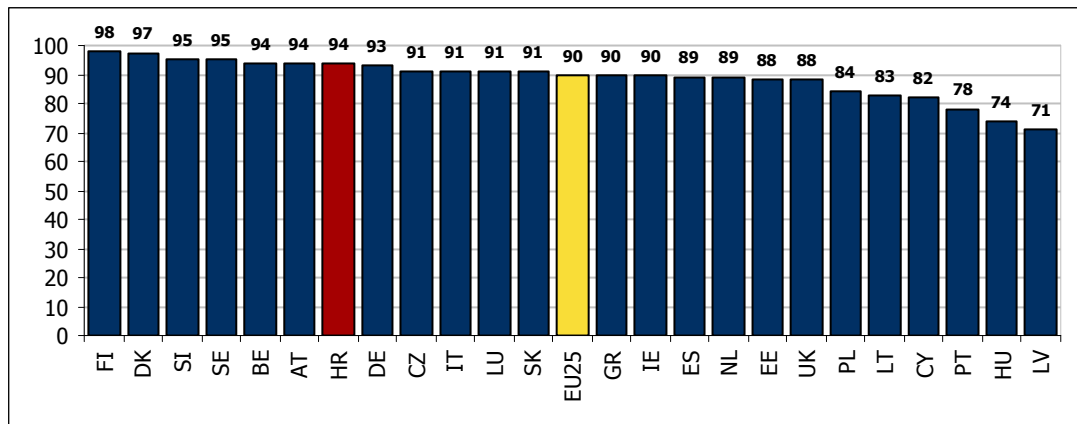
The indicator of Internet access by non-financial enterprises with more than 10 employees is obviously becoming obsolete; as for most countries the indicators exceed 90%. IDC Adriatics; survey showed that 95% of the companies under review in Croatia was connected to the Internet in 2005. The differences among company size categories (measured by the number of employees) varied from 94% for companies with 10-49 staff to 100% for companies with more than 250 staff.

**Figure B1a: Percentage of Enterprises Having Access to the Internet in 2005 (Total)**



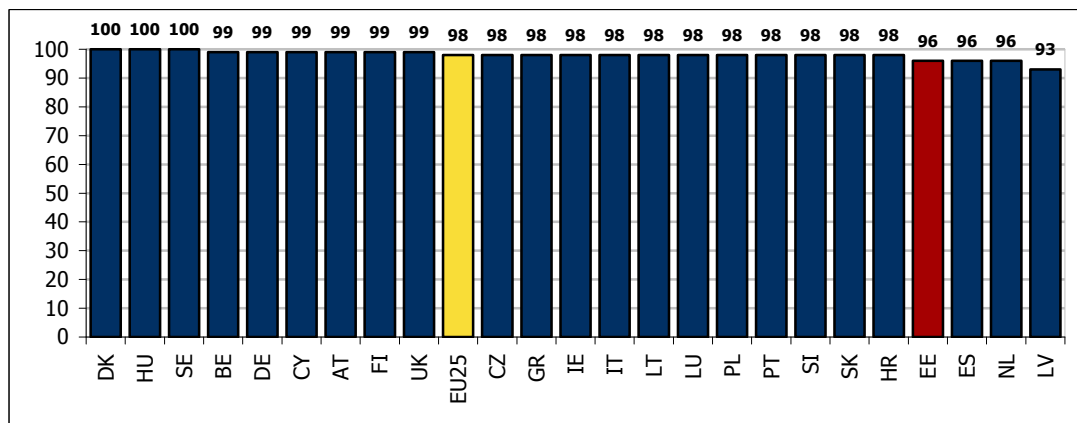
Source: Eurostat for EU Countries, IDC Adriatics for Croatia, 2006

**Figure B1b: Percentage of Enterprises Having Access to the Internet in 2005 (Companies With 10-49 Employees)**



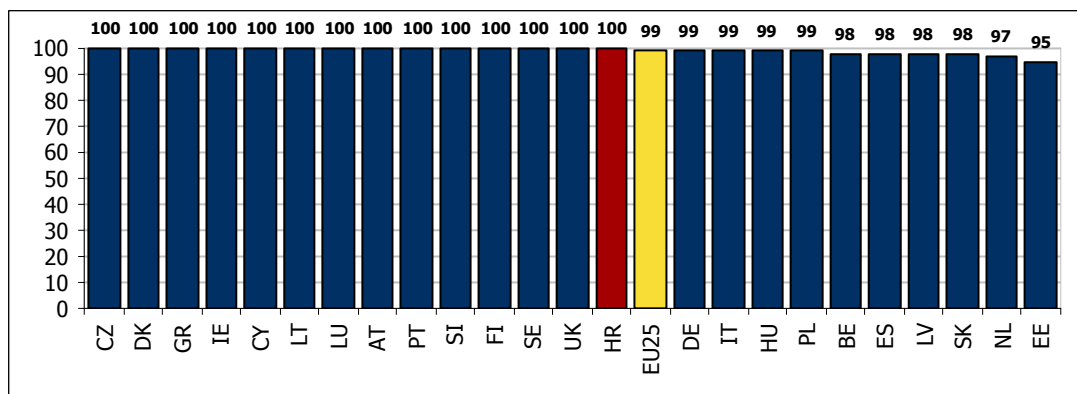
Source: Eurostat for EU Countries, IDC Adriatics for Croatia, 2006

**Figure B1c: Percentage of Enterprises Having Access to the Internet in 2005 (Companies With 50-249 Employees)**



Source: Eurostat for EU Countries, IDC Adriatics for Croatia, 2006

**Figure B1d: Percentage of Enterprises Having Access to the Internet in 2005 (Companies With 250+ Employees)**



Source: Eurostat for EU Countries, IDC Adriatics for Croatia, 2006

**Explanatory Note**

The term "Internet access" means having an external connection to the Internet through an Internet access "service" provider (ISP).

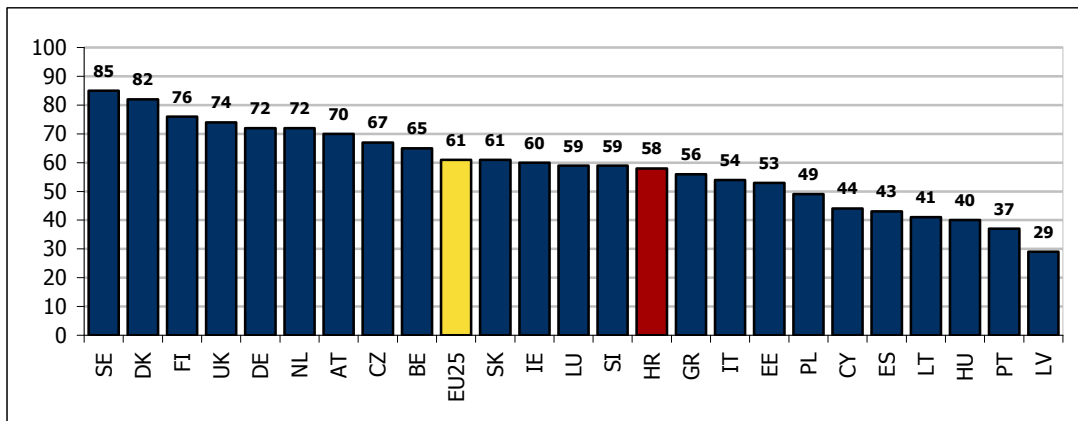
The technologies used to connect to the Internet are physical based or wireless. Another important distinction is between fixed and mobile connections.

Types of external Internet connections include traditional modems, ISDN, DSL, cable modems, high capacity leased lines (Frame Relay, ATM, Digital Multiplex, Ethernet LANs, Optical fibre connections, Satellite connection, Wi-Fi, and other FWA connections), and mobile connections (GPRS, EDGE, UMTS, and others).

**B2. Enterprises' Online Presence**

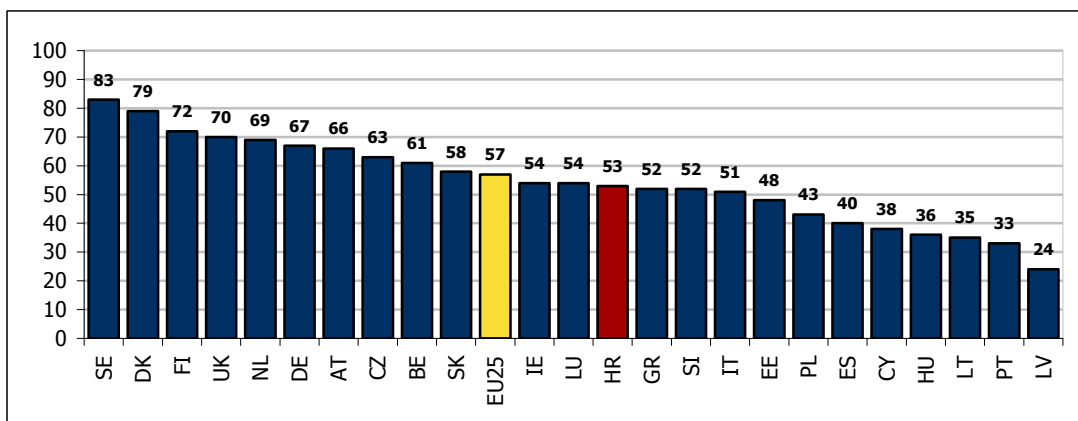
The average of EU25 non-financial enterprises with more than 10 employees having a Web site/homepage in 2005 stood at 61%. This share for Croatian enterprises was slightly lower at 58%. The differences among company size categories (measured by the number of employees) varied from 58% for the companies with 10-49 staff to 95% in the case of over 250 employed enterprises

**Figure B2a: Percentage of Enterprises Having a Website/Homepage in 2005 (Total)**



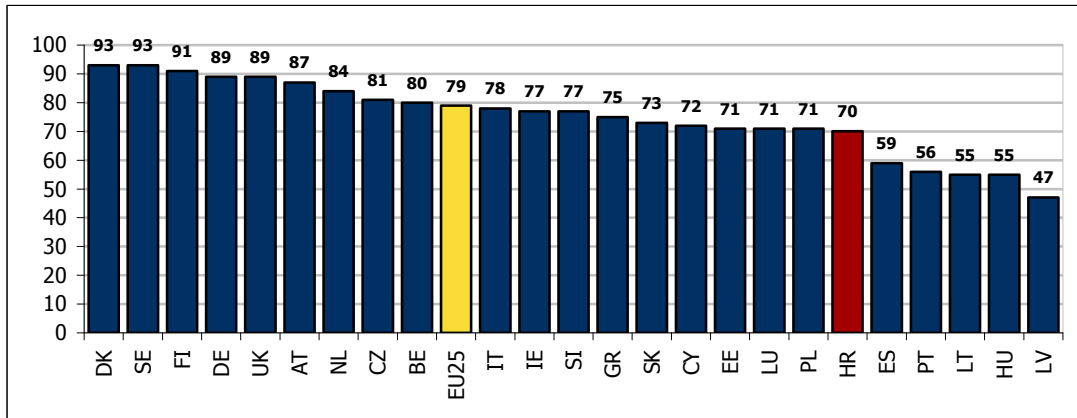
Source: Eurostat for EU Countries, IDC Adriatics for Croatia, 2006

**Figure B2b: Percentage of Enterprises Having a Website/Homepage in 2005 (Companies With 10-49 Employees)**



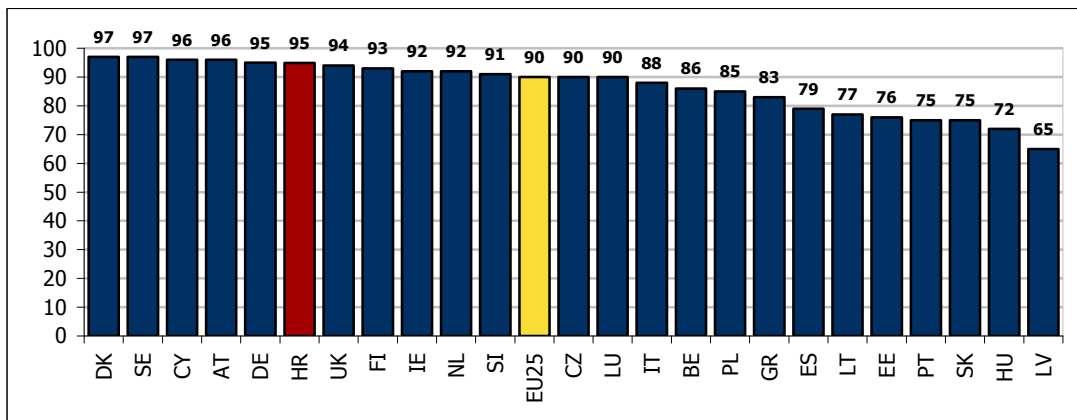
Source: Eurostat for EU Countries, IDC Adriatics for Croatia, 2006

**Figure B2c: Percentage of Enterprises Having a Website/Homepage in 2005 (Companies With 50-249 Employees)**



Source: Eurostat for EU Countries, IDC Adriatics for Croatia, 2006

**Figure B2d: Percentage of Enterprises Having a Website/Homepage in 2005 (Companies With 250+ Employees)**



Source: Eurostat for EU Countries, IDC Adriatics for Croatia, 2006

**Explanatory Note**

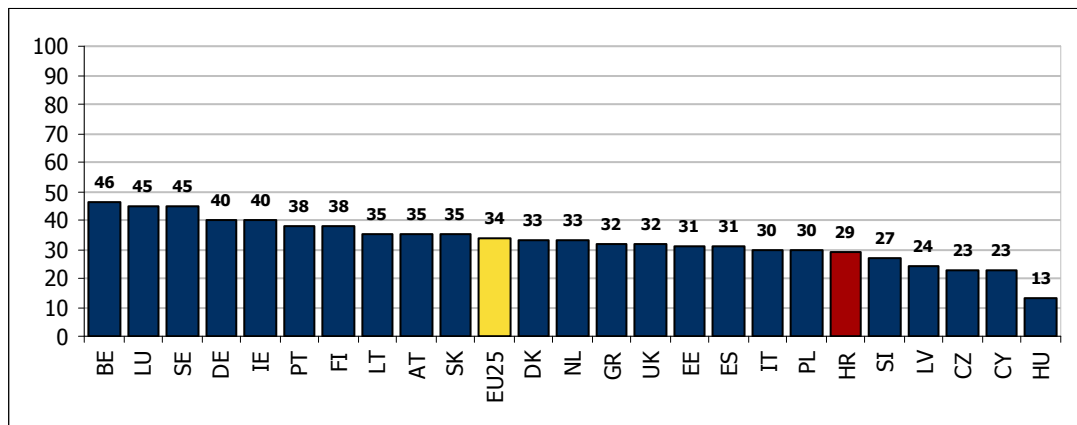
The observation variable does not refer specifically to the ownership of the Web site, but to the use of a Web site by the enterprise. It includes not only the existence of a Web site that is located on servers that belong to the enterprise or are located at one of the enterprise's sites, but also third-party Web sites (e.g., one of the group of enterprises to which it belongs). The indicator, however, does not include any Web presence of the enterprise (e.g., its name or its contact information in directories and online yellow pages).

The variable includes *any* Web site, independently of its sophistication of services provided.

**B3. Enterprises' Usage of Intranets**

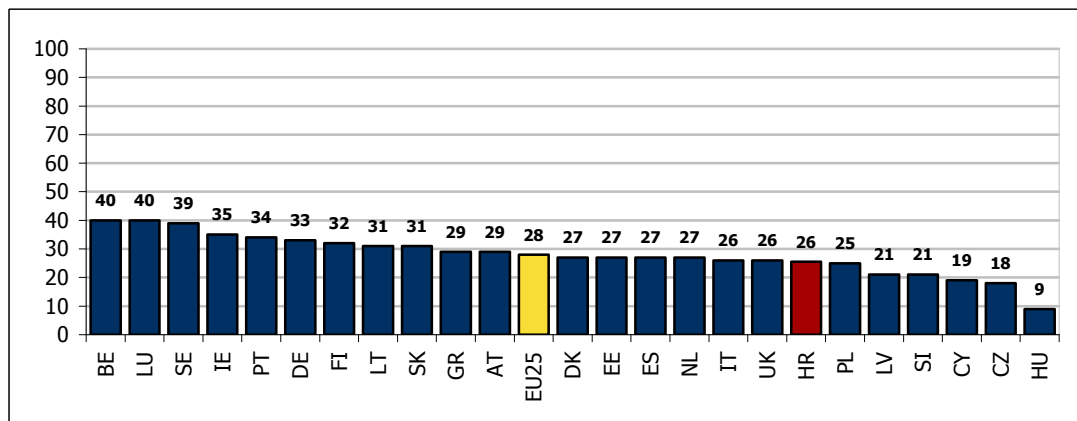
An average of 34% of non-financial enterprises in EU member countries deployed an intranet in 2005. For Croatian companies, the share reached 29%. Of this total, 26% of companies with 10-49 employees had an intranet, 28% of firms with 50-249 employees, and 85% of companies with more than 250 employees implemented an intranet solution.

**Figure B3a: Percentage of Enterprises Using Intranet in 2005 (Total)**



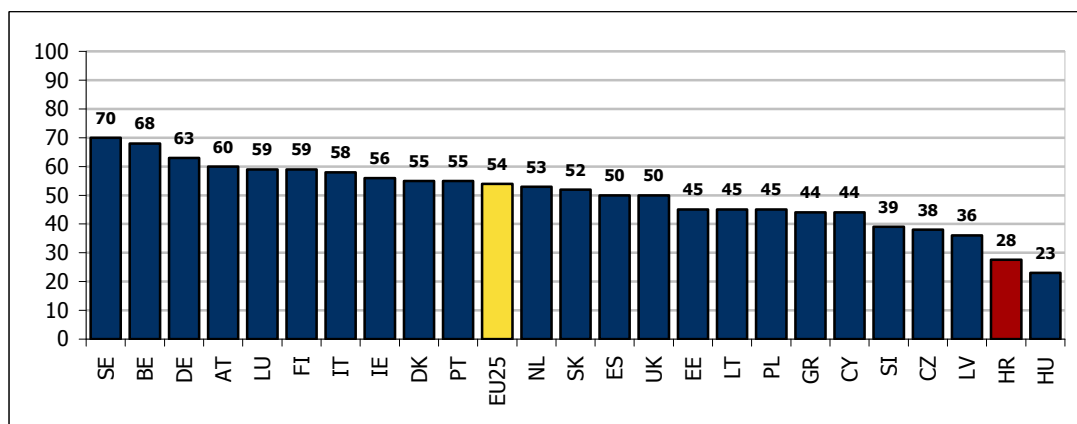
Source: Eurostat for EU Countries, IDC Adriatics for Croatia, 2006

**Figure B3b: Percentage of Enterprises Using Intranet in 2005 (Companies With 10-49 Employees)**



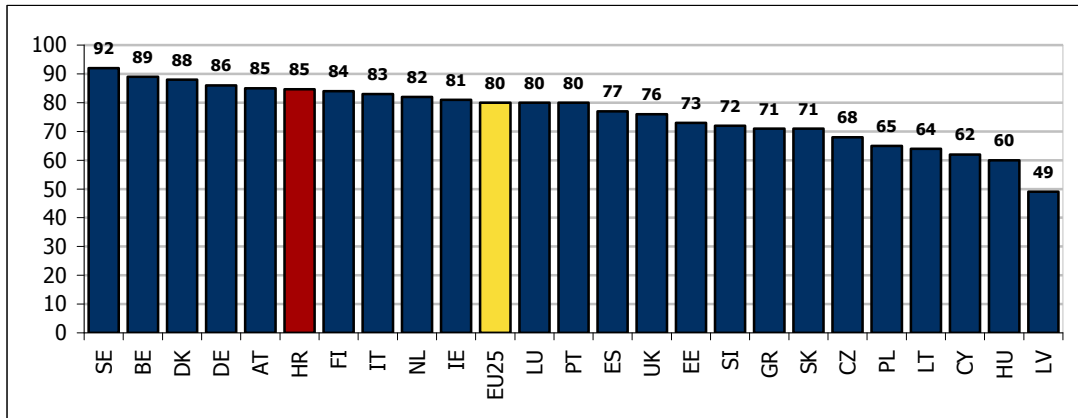
Source: Eurostat for EU Countries, IDC Adriatics for Croatia, 2006

**Figure B3c: Percentage of Enterprises Using Intranet in 2005 (Companies With 50-249 Employees)**



Source: Eurostat for EU Countries, IDC Adriatics for Croatia, 2006

**Figure B3d: Percentage of Enterprises Using Intranet in 2005 (Companies With 250+ Employees)**



Source: Eurostat for EU Countries, IDC Adriatics for Croatia, 2006

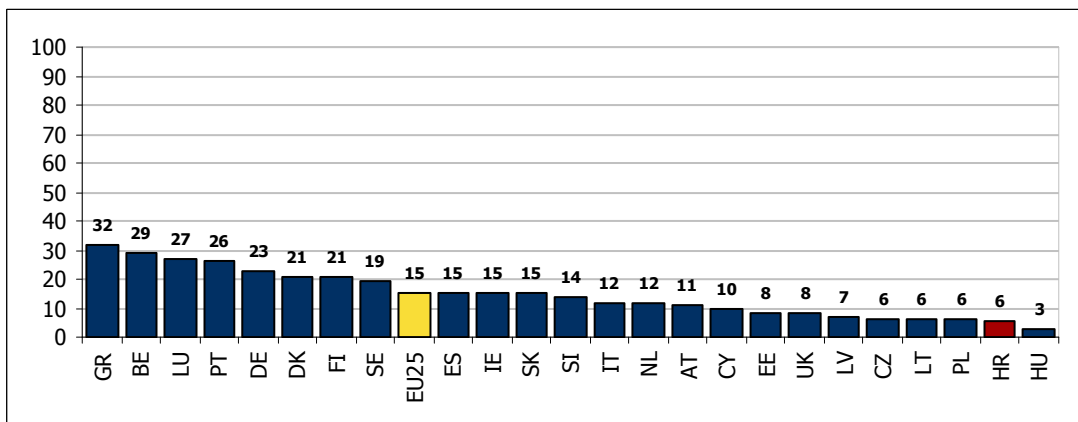
**Explanatory Note**

Intranet refers to the use of Internet protocols (TCP/IP and others) to share and exchange company information in the same way as over the Internet (Web site interface) but with access restricted to internal users via internal business computer-mediated network (LAN or set of enterprise's LANs) infrastructure, accessible only by authorized users (organisation's members, employees, or others with authorization).

**B4. Enterprises' Usage of Extranets**

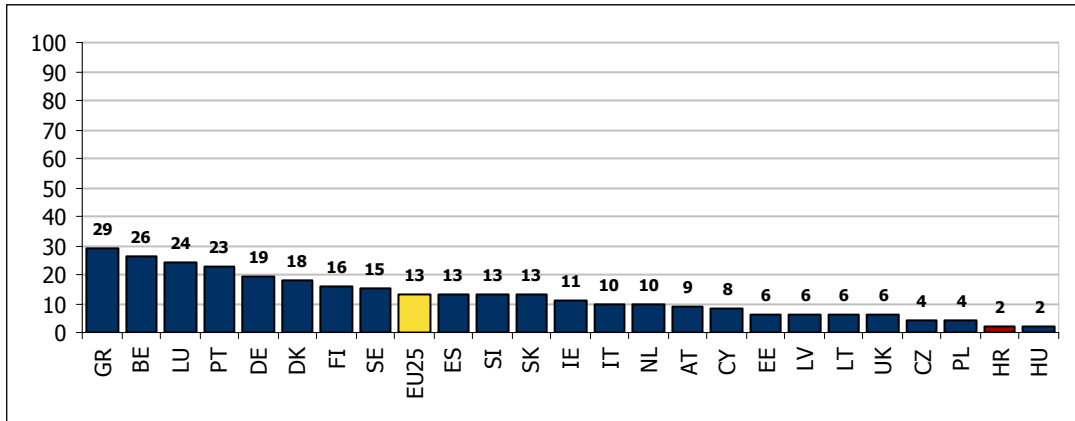
On average, 15% of non-financial enterprises in EU member countries used an Extranet in 2005. For Croatian companies firms, the portion was 6%. Expectedly, firms with over 250 employees recorded the highest score for extranet implementations among local companies at 41%. The share of extranet deployment among firms with 50-249 staff was 11%, and 2% in the case of companies with 10-49 staff.

**Figure B4a: Percentage of Enterprises Using Extranet in 2005 (Total)**



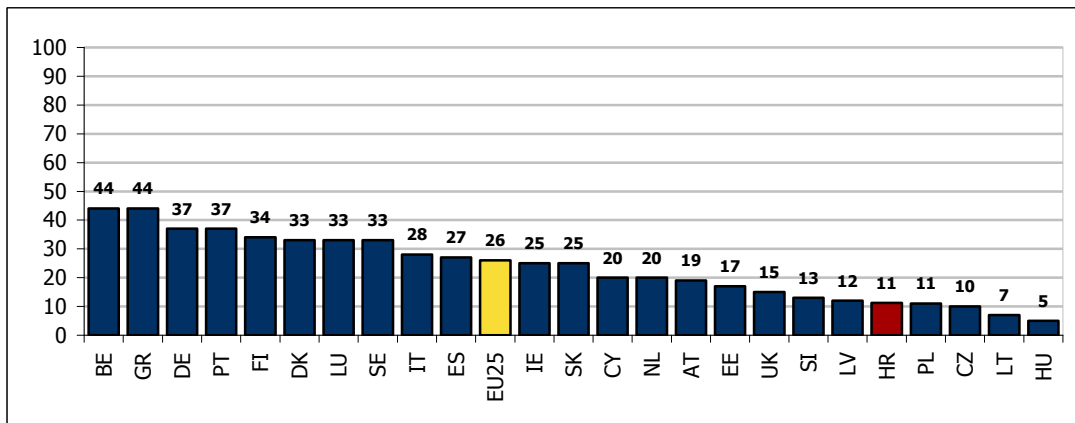
Source: Eurostat for EU Countries, IDC Adriatics for Croatia, 2006

**Figure B4b: Percentage of Enterprises Using Extranet in 2005 (Companies With 10-49 Employees)**



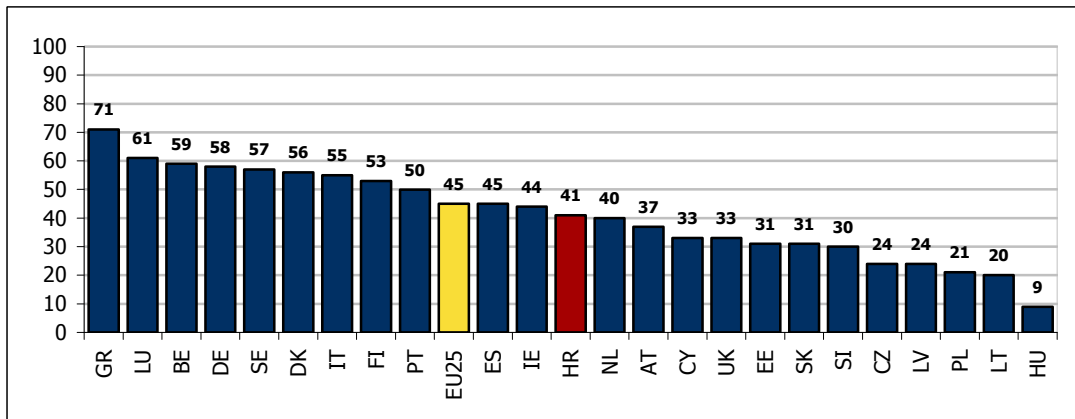
Source: Eurostat for EU Countries, IDC Adriatics for Croatia, 2006

**Figure B4c: Percentage of Enterprises Using Extranet in 2005 (Companies With 50-249 Employees)**



Source: Eurostat for EU Countries, IDC Adriatics for Croatia, 2006

**Figure B4d: Percentage of Enterprises Using Extranet in 2005 (Companies With 250+ Employees)**



Source: Eurostat for EU Countries, IDC Adriatics for Croatia, 2006

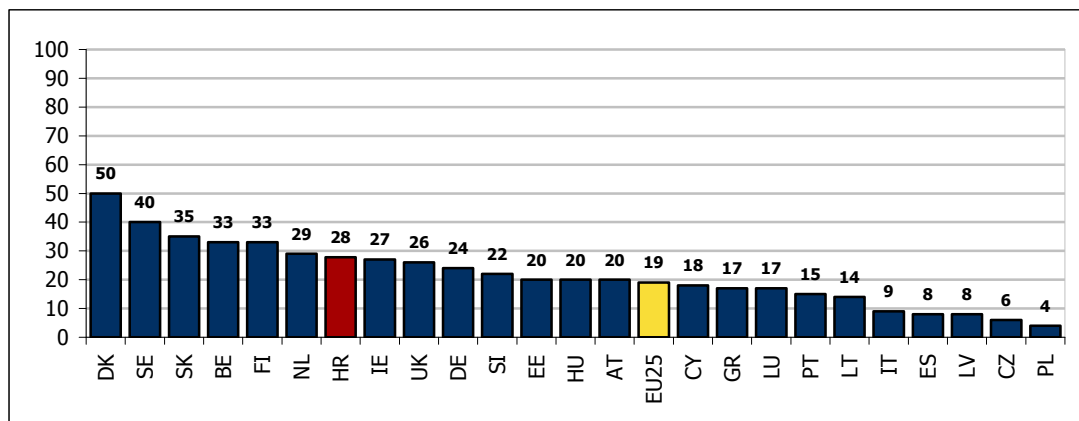
**Explanatory Note**

A secure extension of an Intranet that allows external users to access some parts of an organization's Intranet.

### B5. Enterprises' Remote IT Enabled Working

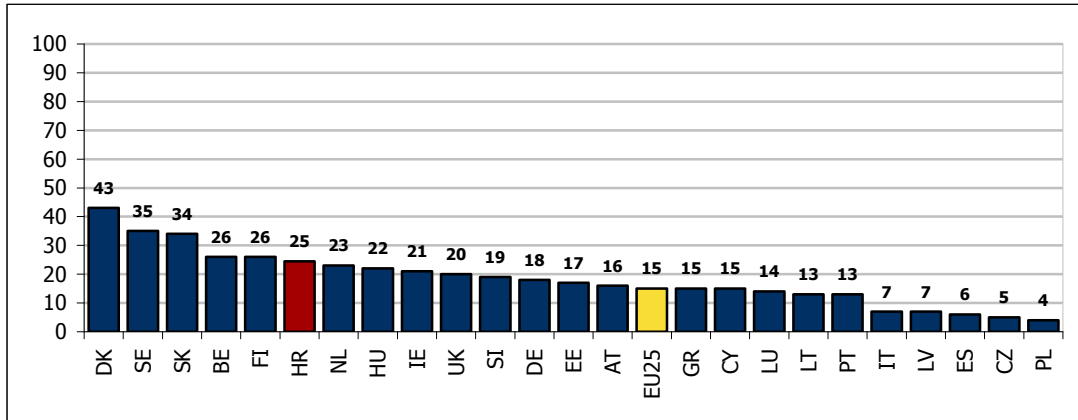
Eurostat figures show that at the beginning of 2005, remote work related to accessing the company's IT system was used by 19% of non-financial businesses with more than 10 employees. In Croatia, this indicator reached 28%. Similar to European countries' practice, IT-enabled remote work in Croatia is used far more in large enterprises. IDC believes that in the case of Croatia, this indicator prevalently comprises jobs including logistic fieldwork (distribution, retail, utilities services inspection, transportation), while genuine work from home is in a nascent phase.

**Figure B5a: Percentage of Enterprises with Persons Employed Working Part of Their Time Away from Enterprise Premises and Accessing the Enterprise's IT Systems from There in 2005 (Total)**



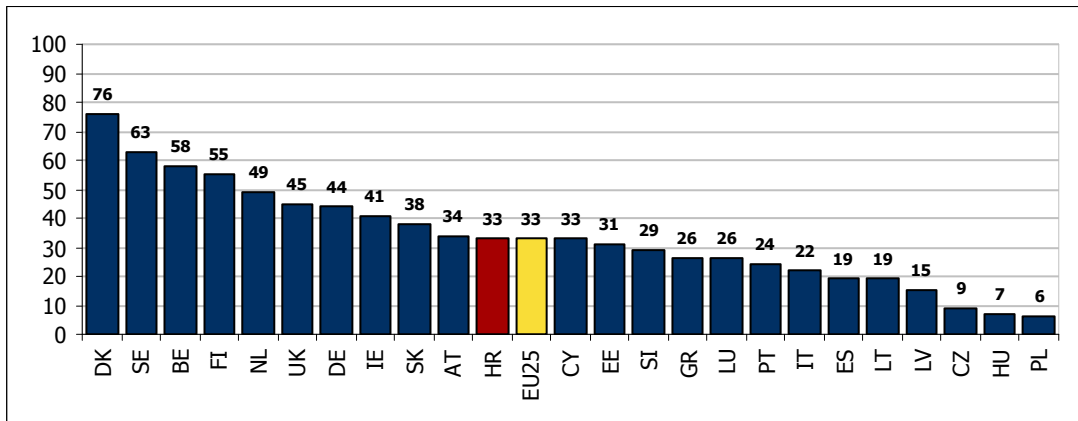
Source: Eurostat for EU Countries, IDC Adriatics for Croatia, 2006

**Figure B5b: Percentage of Enterprises with Persons Employed Working Part of Their Time Away from Enterprise Premises and Accessing the Enterprise's IT Systems from There in 2005 (Companies With 10-49 Employees)**



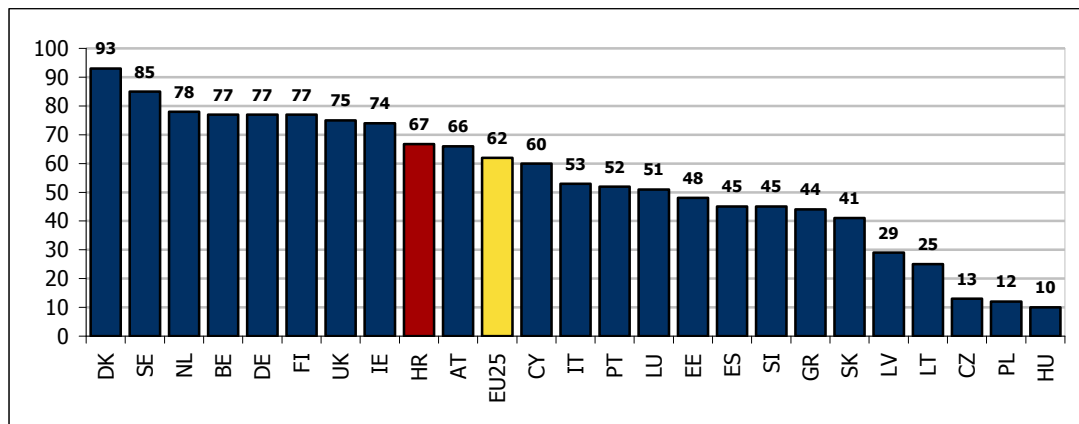
Source: Eurostat for EU Countries, IDC Adriatics for Croatia, 2006

**Figure B5c: Percentage of Enterprises with Persons Employed Working Part of Their Time Away from Enterprise Premises and Accessing the Enterprise's IT Systems from There in 2005 (Companies With 50-249 Employees)**



Source: Eurostat for EU Countries, IDC Adriatics for Croatia, 2006

**Figure B5d: Percentage of Enterprises with Persons Employed Working Part of Their Time Away from Enterprise Premises and Accessing the Enterprise's IT Systems from There in 2005 (Companies With 250+ Employees)**



Source: Eurostat for EU Countries, IDC Adriatics for Croatia, 2006

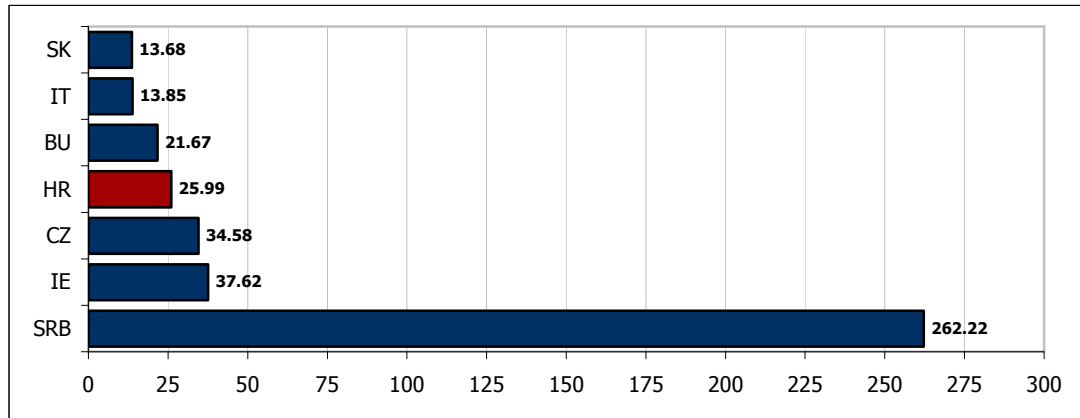
#### Explanatory Note

Persons employed who regularly work part of their time away from the enterprise's regular worksite include persons working at home, at locations belonging to a third party (e.g., customer premises), on the move (i.e., while travelling), at other places different from traditional workplaces (hotels, conferences, etc.), and in another location belonging to the enterprise (and not being the regular place of work).

### C. Internet Access Costs

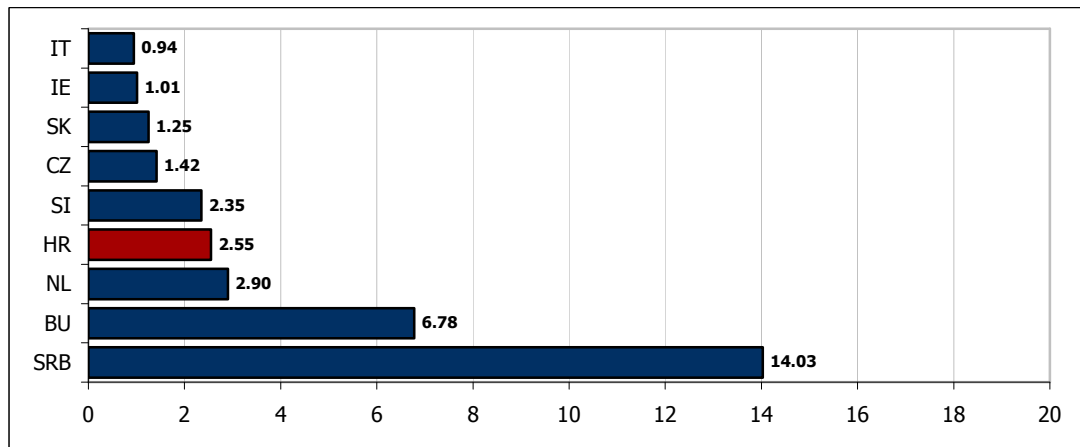
The following section provides the comparison of broadband (DSL) Internet access tariffs as offered in Croatia and selected group of European countries. The evaluation of costs related to the usage of DSL Internet access connections includes comparisons of the entry-level packages and flat-rate packages normalized at 1Mbps. The normalized 1Mbps price is calculated by adding upload and download speeds and "normalizing" this to 1Mbps (e.g., if upload is 2Mbps and download is 1Mbps, than the total is 3Mbps; and the price of this offer is divided by 3 to give the normalized 1Mbps price). The "normalized" entry-level packages include 10 GB of free traffic and 40 hours of usage. It is to be noted that all prices are at Purchasing Power Parity.

**Figure C1: Cost of Normalized 1 Mbit Entry-Level Broadband Access Tariffs in Selected European Countries (EUR), September 2006**



Notes: Netherlands and Slovenia: not included due to unavailable data; Slovakia: tariffs for subscribers of 24-month contract.  
Source: IDC Adriatics, 2006

**Figure C2: Cost of Normalized 1 Mbit Entry-Level Flat-Rate Broadband Access Tariffs in Selected European Countries (EUR), September 2006**



Notes: Bulgaria: the tariffs are valid for subscribers to a 12-month contract; Croatia: the connection fee of HRK 1 is offered only to subscribers to a 12-month contract; Czech Republic: for subscribers agreeing to a 12-month contract; Slovakia: tariffs for subscribers agreeing to a 24-month contract.  
Source: IDC Adriatics, 2006

This comparison reveals that costs related to the usage of the entry-level broadband access package in Croatia are significantly higher than in Netherlands, Italy, and especially Ireland. Furthermore, access services are up to twice as costly in Croatia than in some new member states (Slovakia and the Czech Republic). On the other hand, usage of entry-level broadband services in Croatia was more than 50% cheaper than in Bulgaria and more than five times cheaper than in Serbia.

## Modern Online Public Services

### D. e-Government

Implementation of e-government services is a political priority across Europe. All countries provide online public services, and most of them have e-government strategies and action plans to direct their operationalization. To monitor the progress in this area, the Internal Market Council defined in 2001 the set of basic services comprising 12 services for citizens and 8 for businesses. The degree of sophistication of these services is measured on a scale of four degrees ranging from simple information to full online interactivity.

The Central State Administrative office for eCroatia in its Operational Plan for Executing the e-Croatia 2007 Program<sup>19</sup> in 2006 reveals the state of affairs in regards to public online service availability and the degree of their sophistication at the end of 2005, as presented in the table below. The list includes 104 public services, of which 101 have been implemented. Namely, 45% of them were in the first phase, 39% in second phase, 3% reached the third phase, while none had reached the fourth phase.

It should be stressed that the situation in terms of information society-related IT investments in Croatia has been progressing well recently. The funds earmarked for the government's IT procurements in the state budget increased in 2005 and 2006 by 56% and 47%, respectively, with numerous IT projects being launched (e.g., HITRO.HR, HITRONet, eVAT, e-CADASTRE, e-REGOS (Registry of Insured Persons), as well as several projects carried out in the judiciary segment: Court Case Management System, e-Certificate, e-Bulletin Board, Court Network, and e-Court Practice services).

In Europe, progress in making services available is measured using a composite indicator based on Web-based survey of basic services, taking as the indicator of services availability the percentage of services offered with full interactivity only. The value of this indicator for EU15 states in 2004 stood 46%<sup>4</sup>. Thus, as Croatia has not yet been providing fully interactive online public services, the comparison in that respect is not relevant.

It should be noted, however, that availability of online public services does not necessarily imply their actual use. Eurostat's Community surveys for enterprises and

households showed that in 2004 only 6% of households in EU15 countries actually used the fully integrated services. The same indicator for enterprises reached 15%<sup>4</sup>.

**Table 1: Public Services**

<b>Service Area - Service</b>	<b>Stage in 2005</b>
<b>1. Income Taxes: Declaration, Notification of Assessment</b>	
1.1. Declaration of Income Taxes	2
<b>2. Job Search by Labor Offices</b>	
2.1. Registration with Croatian Employment Service	1
2.2. Available Job Offerings Browser	1
2.3. Application Form for Foreign Workers Permits	1
2.4. Application Form for Foreign Businesses Permits	2
2.5. Signing-In and Signing-Off of Employees	1
<b>3. Social Security Contributions</b>	
3.1. Retirement Pension Application Form	2
3.2. Early Retirement Pension Application Form	2
3.3. Disability Pension Application Form	2
3.4. Dependants Pension Application Form	2
3.5. Children Allowance Application Form	2
3.6. Physical Damages Benefit Application Form	2
3.7. Seniority Application Form	2
3.8. Seniority Assessment Application Form	2
3.9. Retirement Allowance Application Form	2
3.10. Retirement Allowance Certificate Issuance Application Form	2
3.11. Primary Healthcare Insurance Application Form	2
3.12. Healthcare Insurance Substitution Application Form	2
3.13. Healthcare Insurance Termination Form	2
3.14. Application Form for Medical Treatment in Foreign Countries	1
3.15. Unemployment Allowance Application Form	1
3.16. Schooling Allowance Application Form	2
3.17. Scholarship Application Form	2
3.18. Retirement Insurance Application Form	1
3.19. Retirement Insurance Termination Form	1
<b>4. Personal Documents</b>	
4.1. Personal Identity Card Application Form	2
4.2. Personal Identity Card Application Form for Foreigners	2
4.3. Passport Application Form	2
4.4. Driving License Application Form	2
4.5. Pending Criminal Prosecution Absence Certificate Application Form	0
<b>5. Vehicle Registration</b>	
5.1. Initial Registration of Motor Vehicles and Trailers	1
5.2. Initial Registration of Floating Vessels	1
5.3. Initial Registration of Aircraft	1
5.4. Registration Renewal for Motor Vehicles and Trailers	1
5.5. Registration Renewal for Floating Vessels	1
5.6. Registration Renewal for Aircraft	1
5.7. Decommission Request for Motor Vehicles and Trailers	1
5.8. Decommission Request for Floating Vessels	1
5.9. Decommission Request for Aircraft	1
5.10. Ownership Change for Motor Vehicles and Trailers	1
5.11. Ownership Change for Floating Vessels	1
5.12. Ownership Change for Aircraft	1
5.13. Probation Registration Request Form	1

<b>Service Area - Service</b>	<b>Stage in 2005</b>
5.14. Loss of Traffic/Vehicle License Report Form	1
5.15. Renewal of Traffic/Vehicle License Application Form	1
<b>6. Construction Permits</b>	
6.1. Building Construction Permit Request Form	2
6.2. Construction Location Permit Request Form	1
6.3. Land Registry Documents Request Form	3
6.4. Cadastre Documents Request Form	2
6.5. Area Planning Documents Request Form	1
<b>7. Police-Related Declarations</b>	
7.1. Notification/Registration of Criminal Acts	1
<b>8. Public Libraries</b>	
8.1. Catalogue/Content Browsing Forms	2
8.2. Content Access and Query Forms	3
<b>9. Certificates</b>	
9.1. Birth Certificate Request Form	2
9.2. Marriage Certificate Request Form	2
9.3. Death Certificate Request Form	2
9.4. Nationality Certificate Request Form	2
9.5. Nationality Application/Termination Request Form	2
<b>10. Higher Education Application</b>	
10.1. Application with Higher Education/University Institutions	1
10.2. Academic Year Advancement Application Form	2
10.3. Academic Year Failure/Repetition Application Form	2
<b>11. Place of Residence</b>	
11.1. Place of Residence Report Form	2
11.2. Change of Place of Residence Report Form	1
11.3. Place of Residence Sign-Off Form	2
11.4. Temporary Place of Residence Report Form	2
11.5. Temporary Place of Residence Sign-In/Sign-Off Form	1
11.6. Change of Place of Residence for Foreign Citizens	1
<b>12. Healthcare Services</b>	
12.1. Interactive Ordering	0
12.2. Interactive Consultation on Available Services	0
<b>13. State Inspectorates</b>	
13.1. Report Form for Deaths, and Group and Severe Injuries	1
13.2. Request Form for Inspection of Trading Companies and Crafts	1
13.3. Application Form for Certification of Pressurized Containers	1
13.4. Request Form for Certification of Quality of Imported Goods	1
13.5. Request Form for Permit for Construction and Manufacture of Pressurized Containers	1
<b>14. Culture</b>	
14.1. Application Form for Co-Financing	1
14.2. Application Form for Tax Relief in Culture and Art	1

Source: Central State Administrative Office for e-Croatia, 2006

**Table 2: Entrepreneurial Services**

<b>Service Area - Service</b>	<b>Stage in 2005</b>
<b>1. Social Contributions for Employees</b>	
1.1. Primary Health Insurance Request Form	2
1.2. Supplementary Health Insurance Request Form	2
1.3. International Health Insurance Request Form	1
1.4. Signing-In/Off of Employees with Pension Insurance System	2

<b>Service Area - Service</b>	<b>Stage in 2005</b>
<b>2. Corporate Tax: Declaration, Notification</b>	
2.1. Declaration of Incoming Corporate Tax	2
<b>3. VAT: Declaration, Notification</b>	
3.1. VAT Declaration	2
<b>4. Company Registration</b>	
4.1. Company Registration	1
4.2. Trade/Craft Registration	1
<b>5. Statistical Data</b>	
5.1. New Company Registration	2
5.2. Branch Office (Subsidiary) Registration	1
<b>6. Customs Declaration</b>	
6.1. Customs Declaration Request Form for Companies	2
<b>7. Environment-Related Permits</b>	
7.1. Area Planning Documents Query Request Form	1
7.2. Construction Location Permit/License Request Form	2
7.3. Business Activities Written Approval Request Form	2
7.4. Request Form for Permits Based on Environmental Impact Studies	1
7.5. Request Form for Certificates on Time Investment	2
<b>8. Public Procurement</b>	
8.1. Access to Public Procurement Announcements Database	3
<b>9. Agriculture</b>	
9.1. Reception of Veterinary Statements	2
9.2. Reception of Statements on Usage of Ecology-Friendly Product Branding	2
9.3. Application Form for Crediting	2
9.4. Application Form for State Funding	2
9.5. Application Form for Inclusion into the Registry of Ecology-Friendly Producers	2
9.6. Application Form for Inclusion into the Registry of Agricultural Farms	2
9.7. Application Form for Imports of Goods	2
<b>10. Agriculture</b>	
10.1. Charters Report Form	1
10.2. Signing-In and Signing-Off of Tourists	1
10.3. Application Form for Provision of Hospitality Services in Closed Premises	1
10.4. Request Form for Certification on Basic Requirements for Hospitality Establishments	11

Source: Central State Administrative Office for e-Croatia, 2006

#### **Explanatory Note**

Stages of interactivity used to measure the availability of basic online public services are:

Stage 1 – Information: online information about public services

Stage 2 – Interaction: downloading of forms

Stage 3 – Two-way interaction: processing of forms, including authentication

Stage 4 – Transaction: case handling, decision and delivery (payment)

## **E. e-Learning**

According to sources from Ministry of Science, Education and Sports, at year-end 2005 all 1,553 primary and secondary schools in the country were connected to the Internet by an ISDN connection, and all had at least one computer classroom. At the same time, a broadband (VPN DSL) connection was implemented in 397 schools. (In the course of 2006, almost all schools – with exceptions for some in remote

locations – acquired a broadband connection). Since September 2005 Croatian Academic and Research Network (CARNet) implemented a series of online services in schools (e.g. provided e-mails for all pupils, as well as web hosting services and tools for creation and content management of schools' Internet pages, deployed a Learning Management System (as a core part of Central National Education Portal), and launched a development of centralized online knowledge testing system for primary schools).

In 2005, the number of PCs installed in primary schools reached 19,000, and 14,000 in secondary schools. The PC installed base per 100 pupils in the country was 5.4 for primary schools and 7.1 for secondary schools, lagging behind the EU averages (for comparison in Slovenia in 2004, there were 10.6 PCs per 100 pupils in elementary, and 9.7 in secondary schools). Generally, from the infrastructure and equipment aspect, e-learning developments in primary and secondary level education in Croatia have been quite substantial. (From 1997 to 2005, \$160 million was invested for that purpose).

However, despite significant advancements in creation of modern education environment, further encouragement and development is needed in order to obtain the levels of expertise and quality of content, as suggested by the European Action Plan on development of e-Education. In that respect, there is a particular problem with insufficient ICT education of teachers and their lacking usage of facilities provided by contemporary educational infrastructure.

In the higher education level, the broadband connectivity issue is solved by CARNet's backbone network infrastructure. At the moment, there is a total of 30 remote-lecturing-ready classrooms set up major Croatian cities. On the IT equipment side, the evidence on the exact installed base is lacking. There are wide discrepancies in the ways universities and particular faculties obtain equipment and software applications. In the case of financially healthier faculties, up to 90% of ICT procurements are funded by their own means, while for those less lucky even up to 80% is financed by the government. There are also donations, contributions from local government, and other sources. On the usage side, the deployment of applications facilitating the education processes and e-learning solutions differs widely from faculty to faculty.

The ICT skills-related training of adults (persons out of the formal educational process) is crucial for overcoming the skill gap in the country, but depends on the commitment of public administration and enterprises, as well citizens' personal

ambitions. Not much evidence in that respect is available. Over 2005, the ECDL training were getting momentum.

## **F. e-Health**

There is very little evidence of e-health developments in Croatia. IDC Adriatics believes that out of almost 4,000 subjects in the sector (hospitals, health centers, public health institutions, primary doctor offices, pharmacies) more than 60% are connected to Internet, and 12% have a broadband connection. According to the Ministry of Health and Social Care, at year-end 2005 2,969 general practitioners were equipped with personal computers. No online public services have been introduced on a state level to date, nor the citizen health card, which is believed to be the true enabler of e-health applications. Two major projects at the state level (hardware and software equipment, and networking of primary healthcare subjects and hospitals central system) were not yet operational at the end of 2005, despite having been initiated years ago. The primary healthcare project is expected to be implemented by the end of 2006, while the timeframe for completion of the second project is not yet certain.

Despite the absence of the coordination and support by government sources, a number of informatization projects on the individual level of doctors' offices, hospitals, and other participants in the healthcare sector took place. Hospitals in general do use some kind of ERP system and specialized health applications, have Internet access, and maintain Web pages; doctors' offices are equipped with PCs and apply some software; and there are rare and sporadic online patients' services offered, and telemedicine projects implemented.

On the EU level, the indicators to monitor and benchmark the developments in the e-health domain were:

- (1) Percentage of population using Internet to seek health information for themselves and others,
- (2) Percentage of general practitioners using electronic patient records,
- (3) Percentage of health professionals with Internet access, and
- (4) Use of different categories of Web content by health professionals.

## **A Dynamic e-Business Environment**

### **G. Buying and Selling Online**

Of 400 companies covered in the survey, 80 stated that they purchased goods and/or services over the Internet in 2005. The majority (41), however, reported that online purchases made up less than 1% of their annual expenses, whereas 11 of them (mostly small and medium-sized enterprises) stated that they realized a quarter or more of their annual purchases over the Internet. More than half of this 80-group (44) employed some kind of online payment service in their purchases, while only four companies said they purchased from specialized Internet marketplaces.

The ratio between those companies that do and do not sell over the Internet was lower than that related to purchases, as only 25 companies (6%) of the 400 interviewed reported that they, in fact, had an online sales system in place. Five companies of this group of 25 reported that online sales made up around 10% of their annual sales, while four of them said that last year's contribution from selling their goods and services over the Internet was around or slightly in excess of only 1% of their overall revenue. When looking at online sales in terms of sales destination it turns out that Croatian enterprises still did the majority of business at the local level. In cumulative figures, around 64% of sales, as reported by the said 25 companies, were made in Croatia (i.e., to customers residing in the country), while 32% of sales were being made in the EU zone. The remaining 4% of sales was directed toward other international clients. In regards to receiving online payments for goods and services sold over the Internet the companies were divided in half – with 12 of them reporting at least one customer that paid in this fashion, as opposed to 13 that reported no such transactions being made last year. None of the 25 companies that reported Internet sales made use of any specialized online market places to sell their goods or services.

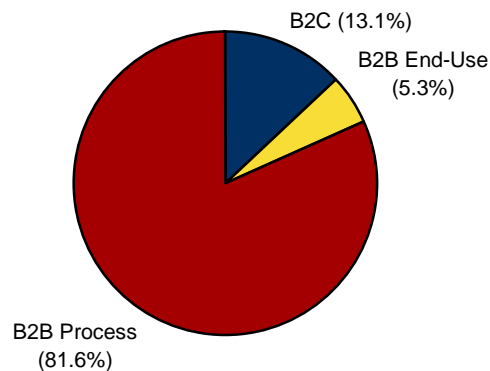
#### **G.1. Market Overview**

In its annual eCommerce report<sup>16</sup>, IDC Adriatics sized the country's online commerce market in 2005. Continuing the positive trend witnessed in 2004, the market expanded by 65.9%, reaching \$437.13 million (EUR 351.35 million) in value of commerce transactions handled online. Of the amount, 86.9% were made among companies (B2B), while 13.1% of value was generated by consumer demand (B2C).

These shares expressed in amounts equal \$379.83 million (EUR 395.28 million), and \$57.30 million (EUR 46.06 million), respectively.

Due to a surge in both the number and value of online retail transactions in Croatia in 2005, the value of Croatian B2C Internet commerce grew somewhat faster than the remainder of the overall retail trade during the last two years. B2C, however, still made up only 0.51% share of the country's retail market value (valued at \$11.30 billion) in 2005, up from 0.23% share in 2003 and 0.37% share in 2004.

**Figure G1: Croatian eCommerce Market by Segments, 2005**



**Total = \$437.13 million**

Source: IDC Adriatics, 2006

The most notable category in the B2B segment were the process B2B transactions, i.e., those aimed at acquiring goods and services used by companies in processes of production or provision of more complex goods and services. This segment alone was responsible for \$356.53 million (EUR 286.57 million) of total eCommerce value last year. As only a limited number of companies had a functional and fully-fledged B2B interface, and only several large companies and corporations/conglomerates in the country were generating the bulk of B2B transactions' value, the B2B end-use segment (i.e., online sales and purchases aimed at securing various goods and services *consumed* by companies) had the smallest share of the total value of Croatian eCommerce operations at \$23.30 million (EUR 18.73 million).

## G.2. Number of Companies, Workforce Size, and Spending per Capita

By the end of 2005, IDC had identified around 200 B2C and approximately 30 B2B companies that were actively trading over the Internet. These companies employed a total of 25,846 people with around 730 of their staff combined being directly involved in provision of support for online commerce services. The portion of this workforce was significantly lower in the B2B segment (1.0%), while B2C enterprises dedicated a larger 6.6% of their personnel to that end.

When comparing the overall value of eCommerce with the country's population, it turns out that Croatian citizens spent around \$98 in online trade last year. By segment, the breakdown was as follows: B2B process eCommerce (80 per capita), B2C eCommerce (\$13 per capita), and B2B end-use eCommerce (\$5 per capita).

### **Explanatory Note**

An electronic transaction is the sale or purchase of goods or services, whether between businesses, households, individuals or private organizations, conducted over computer-mediated networks. The goods and services are ordered over those networks, but the payment and the ultimate delivery of the good or service may be conducted on or offline.

## H. e-Business Readiness

The e-business readiness index is one of the policy sub-indicators selected by the Council resolution of January 2003, aimed to reduce the complexity into a single composite indicator. The basic indicators of the index are grouped in two categories measuring the various components of a country's technological development: 6 basic indicators for the group "Adoption of ICT by Business", and 6 basic indicators for the group "Use of ICT by Business". A pilot exercise for the evaluation of the e-business readiness index for EU countries was done in 2003, while the second attempt followed in 2005, conducted by Joint Research Centre of the European Commission<sup>9</sup>. According to this study (based on 2004 data collected through Community Enterprise ICT-Usage Survey covering only the businesses with more than 10 employed) the average EU25 2005 e-business readiness index scores were 58.0 for the ICT adoption, and 25.4 for ICT usage.

For the purpose of this study, IDC Adriatics made an attempt to estimate the e-business readiness scores for Croatia. Due to lack of data and methodological difficulties, however, it was done only at the 'educated guess' level, and as such could be used more as a presentation of the issue than relevant measurement.

Nevertheless, the estimates presented in Table 3 below suggest that Croatian enterprises are incomparably speedier in adopting ICT technologies than using them. On the adoption side, four indicators show rather high scores. Considerably lower is the indicator representing the percentage of total number of persons employed using computers with their normal work routine, and even more the percentage of companies that adopted extranets. On the usage side, the only bright point is the percentage of enterprises using the Internet for banking and financial services.

**Table 3: 2005 e-Business Readiness Index: List of Basic Indicators for Adoption of ICT**

<b>Adoption of ICT: Basic Indicators</b>	<b>Score - Equal Weights</b>
Percentage of enterprises that use the Internet	94.9
Percentage of Enterprises that have Web/Home Page	57.9
Percentage of enterprises that use at least two (2) security facilities at the time of the survey	93.0
Percentage of total number of persons employed using computers with their normal work routine	35.0
Percentage of enterprises having broadband connection to the Internet	57.0
Percentage of enterprises with LAN and using an Intranet and Extranet	2.0
<b>Average</b>	<b>56.7</b>

Source: IDC Adriatics, 2006

**Table 4: 2005 e-Business Readiness Index: List of Basic Indicators for Use of ICT**

<b>Use of ICT: Basic Indicators</b>	<b>Score - Equal Weights</b>
Percentage of enterprises that have purchased goods/services via the Internet, EDI or any other computer mediated network where these are >1% of total purchases	0.1
Percentage of enterprises that have received orders via the Internet, EDI or any other computer-mediated network where these are >1% of total turnover	0.1
Percentage of enterprises whose IT systems for managing orders or purchases are linked automatically with other internal IT systems	15.0
Percentage of enterprises whose IT systems are linked automatically to IT systems of suppliers or customers outside their enterprise group	0.1
Percentage of enterprises with Internet access using the Internet for banking and financial services	75.0
Percentage of enterprises that have sold products to other enterprises via a presence on specialized Internet market places	0.1
<b>Average</b>	<b>15.1</b>

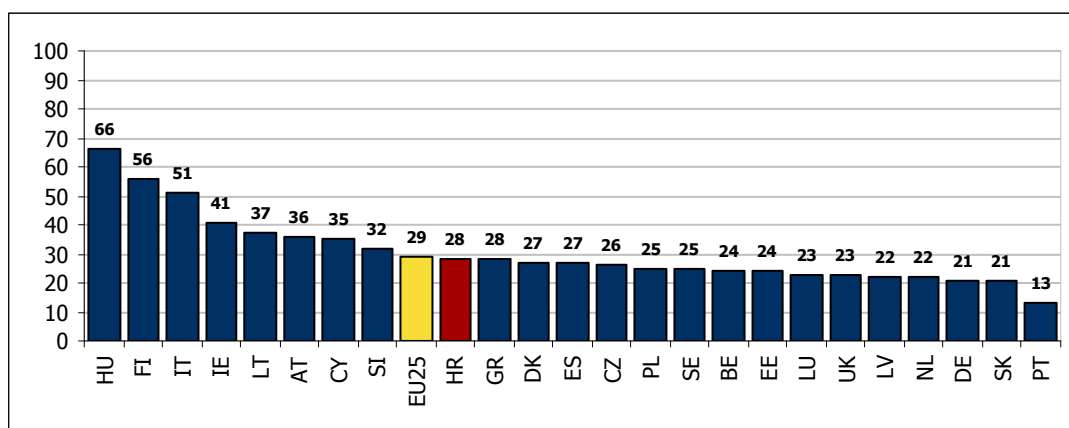
Source: IDC Adriatics, 2006

## A Secure Information Infrastructure

### I. Internet Users' Experience and Usage Regarding ICT-Security

Based on the analysis of the data gathered via IDC's survey of the enterprise sector, Croatia performs well in terms of ICT security: with 28% of enterprises in overall reporting certain security-related problems, the country sits next to the EU25 average. The prevalence of the reported issues were hindrances caused by intermittent computer virus/worm/trojan outbreaks, which made up 98% of the total breaches reported. The remaining 2% was attributed to unauthorized access to companies' ICT infrastructure.

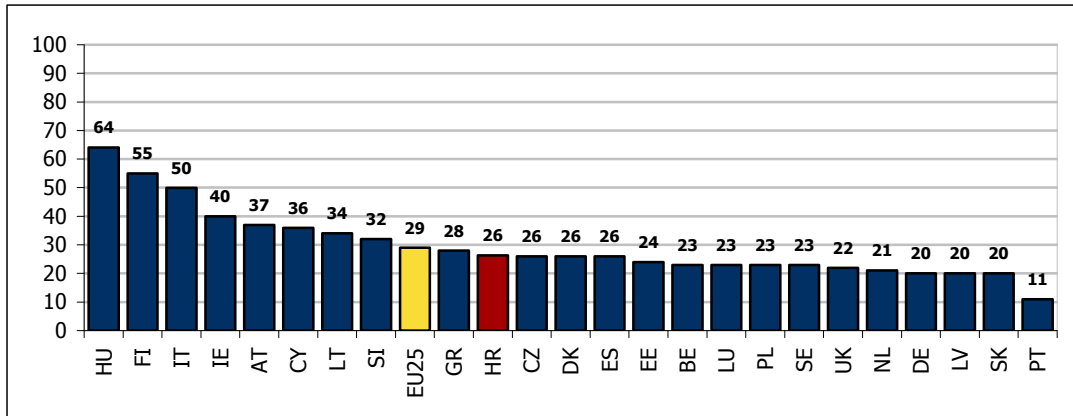
**Figure Ia: Percentage of Enterprises With Internet Access Having Encountered Security Problems in 2005 (Total)**



Source: Eurostat for EU Countries, IDC Adriatics for Croatia, 2006

The level of ICT security is at its highest in the small enterprise segment. With 26% of companies reporting security-related issues, Croatia is situated below the EU25 average. One of the important factors that add to placement this solid is the fact that majority of Croatian companies of this size rely on dial-up, ISDN, and DSL connections which are, in addition to the security provided by connection transience (DSL links are automatically recycled every 24 hours), inherently secured at the ISP end, as all the relevant country's providers bundle integrated firewall, spam filter, and e-mail antivirus scanning systems with their connection packages. In addition, 99.6% of interviewed companies from this segment reported that they had an additional antivirus/antimalware application at their end, and that 73.7% of them used internal software or hardware-based firewall system.

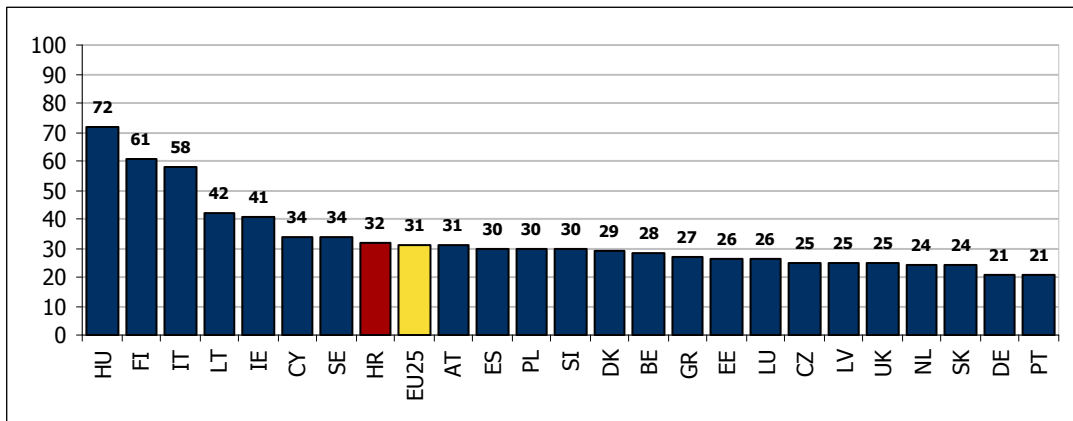
**Figure 1b: Percentage of Enterprises With Internet Access Having Encountered Security Problems in 2005 (Companies with 10-49 Employees)**



Source: Eurostat for EU Countries, IDC Adriatics for Croatia, 2006

Medium-sized enterprises fared slightly worse, being 1 percentage point above the EU25 average. The main culprits here are more complex and difficult-to-manage internal ICT systems employed by these companies, and the fact that much larger workforce uses mobile devices (such as portable/handheld computers and appliances) which, if not secured properly, may potentially represent a very efficient infection vector.

**Figure 1c: Percentage of Enterprises With Internet Access Having Encountered Security Problems in 2005 (Companies with 50-249 Employees)**

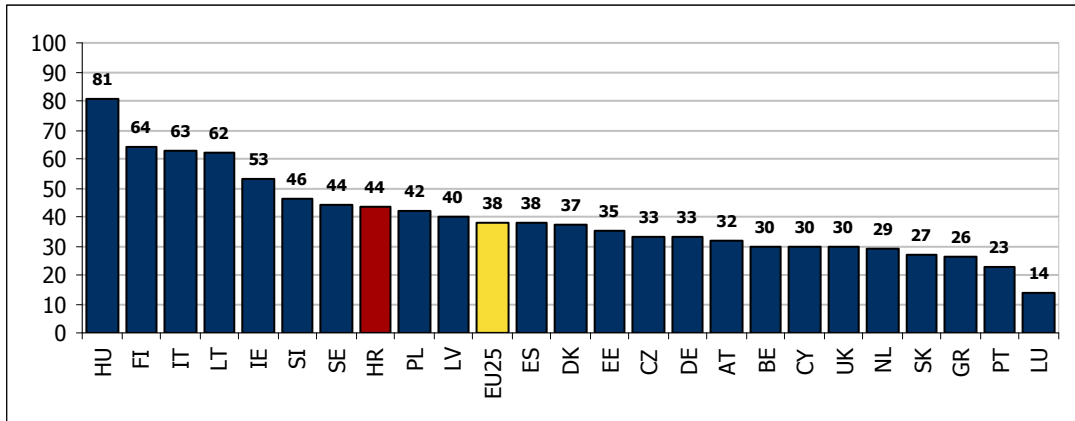


Source: Eurostat for EU Countries, IDC Adriatics for Croatia, 2006

The situation in the large enterprise segment is the least favorable of the three. With 44% of companies reporting security-related ICT problems, Croatia is ranked eighth, in contrast to the EU25 average situated in eleventh place. One of the reasons for companies in this segment to be ranked relatively higher than small and medium-sized enterprises is due to a larger share of them having fixed connection to the

Internet and maintaining their own Web front-ends, which add to the list of potential vectors for security breaches. Indeed, in addition to 100% of companies from this segment that reported malware-related security issues, 18.8% registered issues with unauthorized access to their ICT systems as well.

**Figure Id: Percentage of Enterprises With Internet Access Having Encountered Security Problems in 2005 (Companies with 250+ Employees)**



Source: Eurostat for EU Countries, IDC Adriatics for Croatia, 2006

## Broadband

### J. Broadband Penetration

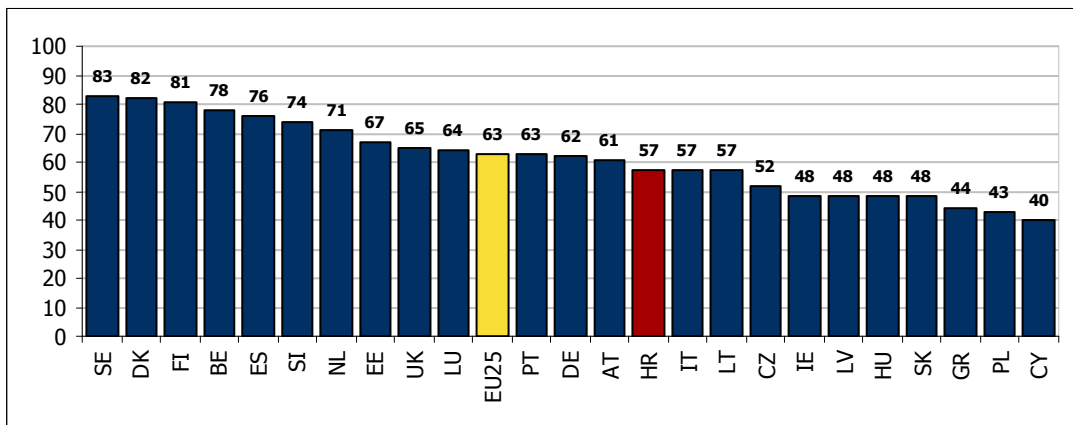
The data provided by Croatian Agency for Telecommunications shows that at year-end 2005 there were 109,800 ADSL broadband Internet connections in Croatia. Of this total, 80,200 were installed in households, while 29,600 were deployed by organizations (enterprises, banking, and other financial institutions, crafts and freelancers, education, healthcare, central and local government entities, other community, social and personal service organizations). The structure of broadband usage according to the type of organizations was not available.

In 2005, compared to a year earlier, the number of ADSL household broadband connections in the country surged (albeit from a low base) by 375%, and the connections in organizations by 369%. Obviously, broadband usage in the country is in full swing. At the time of writing, the number of connections surpassed 175,000. In July this year the Ministry of Maritime, Tourism, Communications and Development proposed the Strategy of Broadband Development in Croatia Until 2008, setting a goal of 500,000 broadband connections by 2008. In public debate, however, the Croatian ISP Association regarded the set goal as not ambitious enough, suggesting that the goal should be 1 million broadband connections.

IDC Adriatics estimates the total broadband connections market in Croatia at more than 250,000 for organizations and around one million for households.

The benchmarking scores obtained by the IDC survey of non-financial enterprises with more than 10 employees in the country indicated that 57% of them had a broadband connection for accessing the Internet. (For comparison the EU25 penetration state was 63%). xDSL was by far the most used broadband technology, followed distantly by fixed-wireless and cable connections.

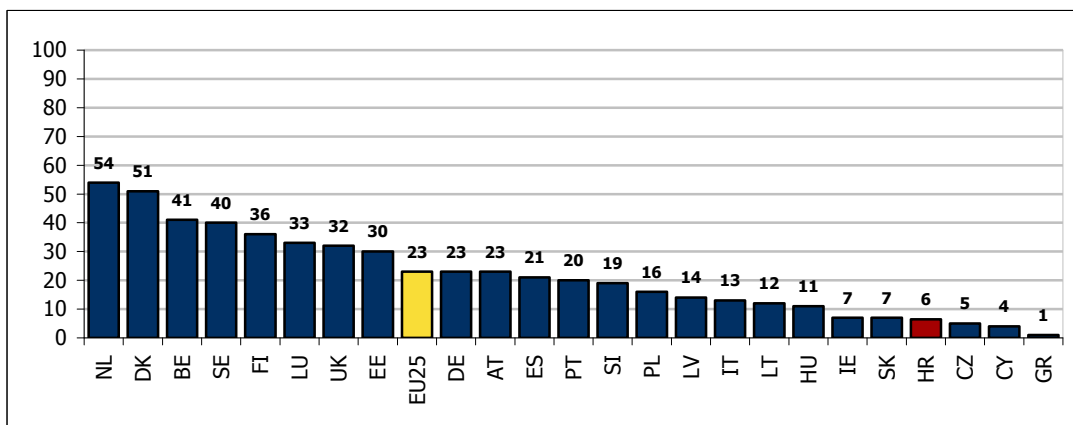
**Figure J1: Percentage of Enterprises With Broadband Access**



Source: Eurostat for EU Countries, IDC Adriatics for Croatia, 2006

At the end of 2005, Croatia counted approximately 1.4 million households. Of this total, some 6.2% used broadband connection for accessing the Internet (the EU25 average was 23%). Similar to organizations, xDSL heavily dominated, but in the case of households a cable connection was second most popular.

**Figure J2: Percentage of Households With Broadband Access**



Source: Eurostat for EU Countries, IDC Adriatics for Croatia, 2006

**Explanatory Note**

Percentage of enterprises with broadband access indicator represents the percentage of non-financial enterprises with 10 or more employees having a broadband Internet connection.  
Percentage of households with broadband access indicator represents the percentage of all households that have a broadband Internet connection.  
Broadband is defined as high speed, e.g., xDSL, cable, satellite, fixed-wireless, LAN and UMTS connection.

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