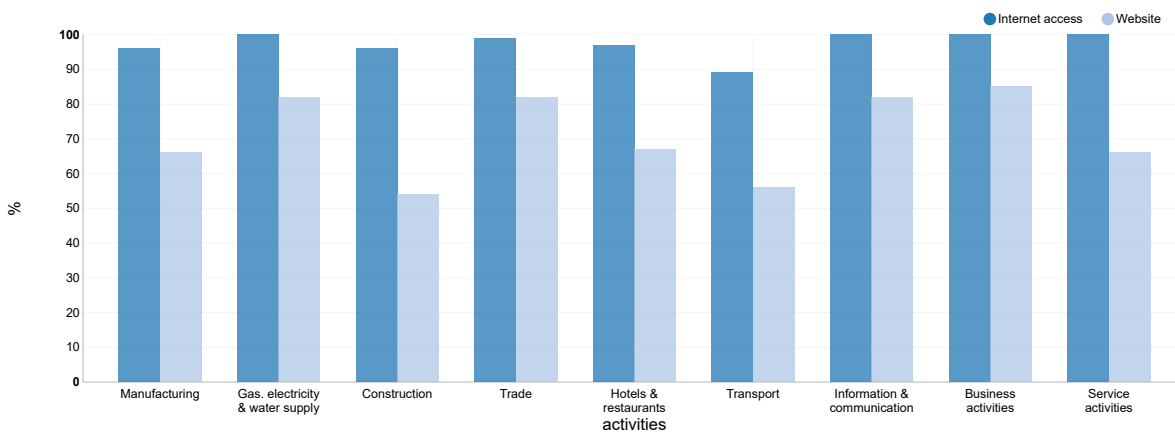


## USAGE OF INFORMATION AND COMMUNICATION TECHNOLOGIES (ICT) IN ENTERPRISES, 2023

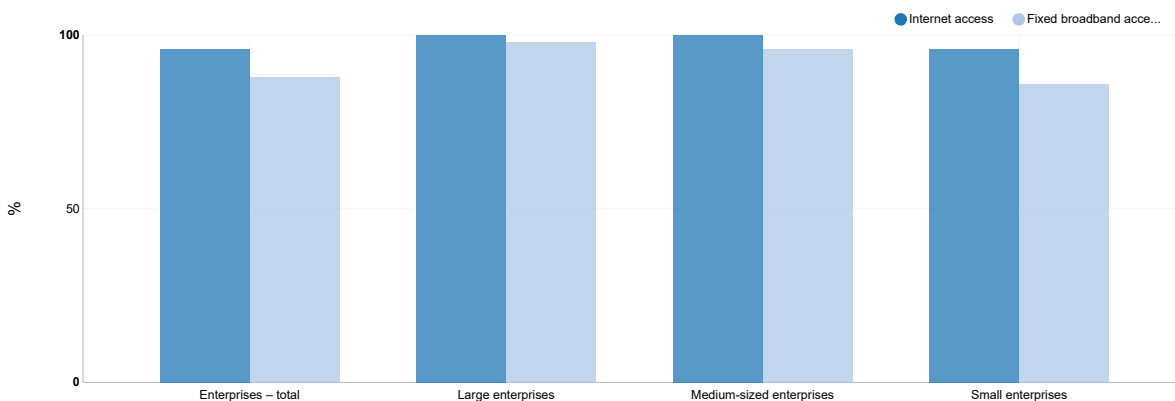
- High level of ICT integration in business conducts; 96% of enterprises use computers with internet access and 69% of enterprises own a website.
- Usage of fixed broadband internet access prevails; 88% of enterprises use some type of fixed broadband internet connection.
- Internet sales account for only 15% of the total sales of goods and services.
- Cloud computing internet service as a new technology is used by 45% of enterprises.

G-1 USAGE OF ICT IN ENTERPRISES, BY ACTIVITIES, 2023



The usage of information and communication technologies is an extremely important part of contemporary business conduct. The survey showed that 96% of enterprises use computers with internet access in their daily work. The internet became a necessity for efficient business conduct, so 69% of enterprises have their own website.

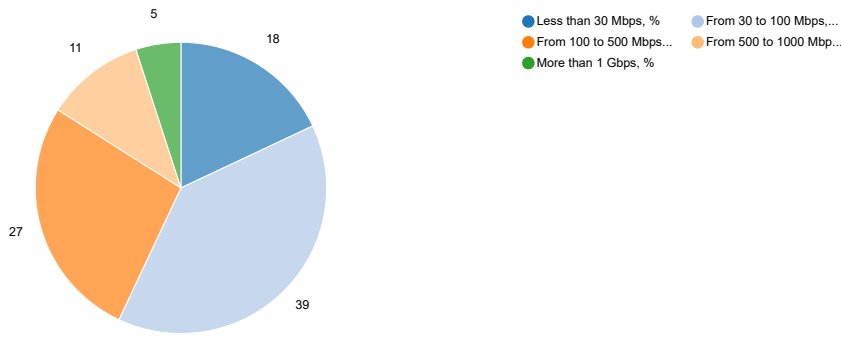
G-2 ACCESS TO INTERNET IN ENTERPRISES, BY ENTERPRISE SIZE, 2023



The internet and other network technologies allow for connectivity between sectors within an enterprise and the integration of business processes that contribute to more efficient business conduct. The type and speed of data transfer allow for better quality of business conduct. There are 88% of enterprises that use a fixed broadband connection

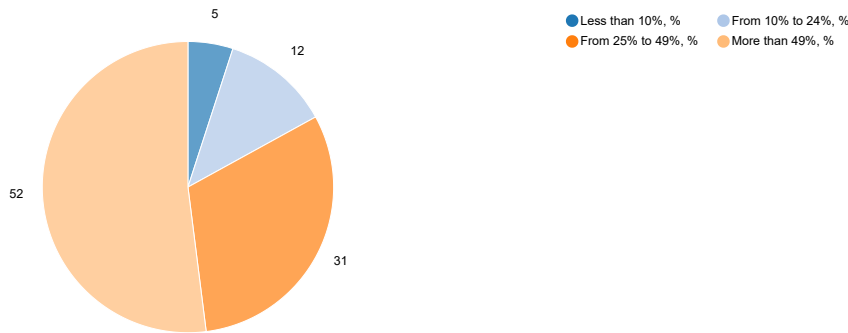
(DSL, cable, leased line).

**G-3 CONTRACTED SPEED OF INTERNET ACCESS IN ENTERPRISES, 2023**

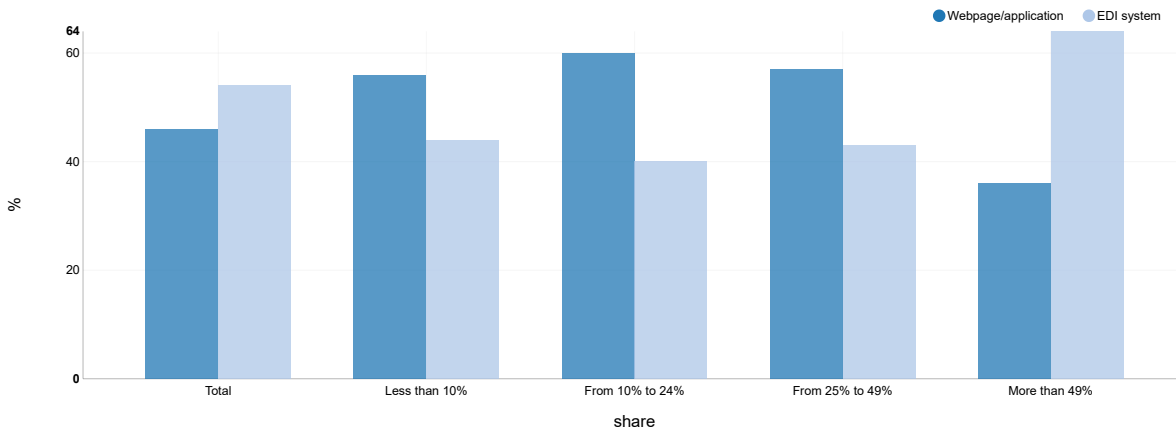


The usage of the internet caused changes in the way business is conducted by enabling the integration of business processes at a higher level. The internet connection speed is becoming an important factor in business conduct. The increasing availability of broadband internet boosts data transfer speed. Data transfer speed of more than 100 Mbps is used by 43% of enterprises (an increase of 4% compared to the previous year).

**G-4 E-COMMERCE – SHARE OF SALES VIA INTERNET COMPARED TO TOTAL SALES, 2022**

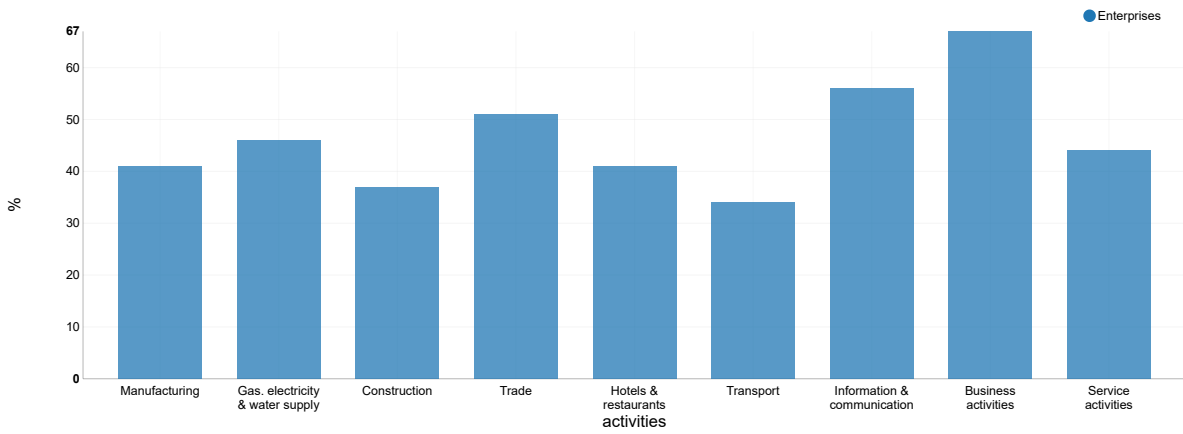


**E-COMMERCE – INTERNET SALES, BY SALES TYPE, 2022**



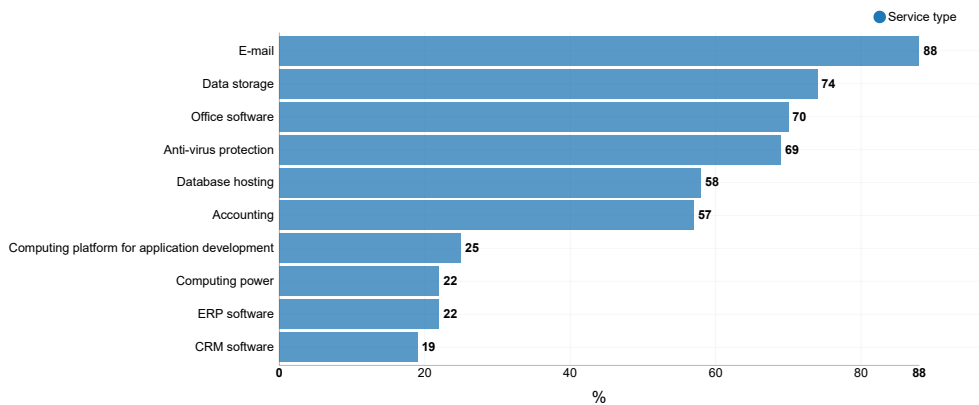
The integration of business processes and communication between business entities via the internet allow for a more efficient offer of goods and services and their purchase and sale on the market. The volume of e-commerce compared to conventional commerce was still rather low and only about 15% of sales are conducted via the internet.

**G-5 USAGE OF INTERNET RESOURCES VIA CLOUD COMPUTING SERVICES, 2023**



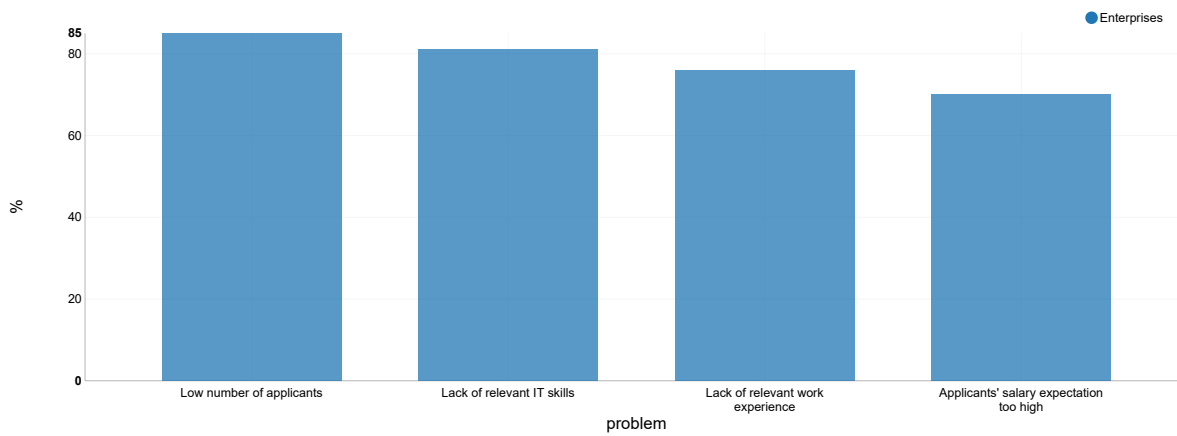
In the Republic of Croatia, the usage of computing resources via cloud computing services is developing; it is used by 45% of enterprises. The representation structure by enterprise size is evenly distributed between small, medium-sized and large enterprises, while graphic presentation shows that its usage is predominant in business activities, information and communication sectors as well as in trade.

**G-6 USAGE OF CLOUD COMPUTING SERVICES, BY SERVICE TYPE, 2023**



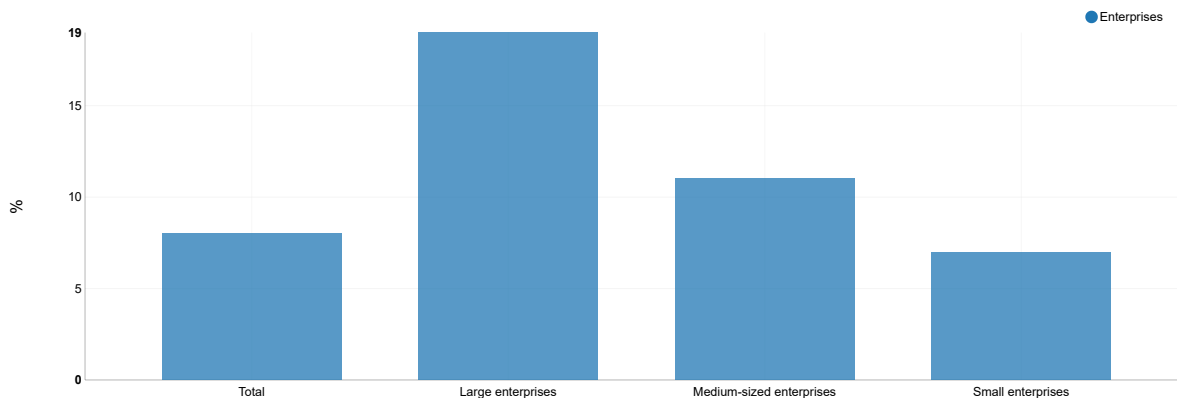
The classification by types of services shows that enterprises most often use cloud computing for e-mail processing, data storage, antivirus protection and usage of office software, while accounting software and database hosting services are somewhat less represented.

### G-7 RECRUITMENT OF ICT SPECIALISTS IN ENTERPRISES, 2022



We also examined whether enterprises have IT specialists employed. IT specialists include staff whose main job is to design, maintain, develop, manage and support information systems in an enterprise. There are 16% of enterprises who stated they had IT specialists employed. In that connection, 7% of enterprises tried to employ new IT specialists last year, but as many as 76% of them had problems finding employees. The most common issues were a low number of applicants and lack of relevant IT skills among candidates.

### G-8 USAGE OF ARTIFICIAL INTELLIGENCE (AI) SYSTEMS, 2023



We also researched another new technology, artificial intelligence (AI), and its application in business processes of enterprises. Only 8% of companies stated that they use some of the artificial intelligence technologies. The application is most common in large companies, and almost one in five of them uses some of the technologies. The most commonly used technologies are the analysis of a written text, generation of written or spoken language, conversion of spoken language into a machine-readable format and data analysis by machine learning.

## NOTES ON METHODOLOGY

### Purpose of the statistical survey

The presented data are estimates obtained through the IKT-POD Survey. This is an annual survey on the usage of information and communication technologies (ICT) that provides information on computer usage, usage of the internet, electronic commerce and other ICTs in enterprises. The data are an important source for conducting policies in the field of information society in the Republic of Croatia and in the European Union.

### Legal framework

The IKT-POD Survey was conducted in 2023 according to Eurostat guidelines and on the basis of the Official Statistics Act (NN, No 25/20). Harmonised surveys were conducted in all EU Member States, and therefore, the data are internationally comparable. The international data are available on the following web address: [https://ec.europa.eu/eurostat/statistics-explained/index.php/Digital\\_economy\\_and\\_society](https://ec.europa.eu/eurostat/statistics-explained/index.php/Digital_economy_and_society).

Concepts and definitions used in the Survey are in line with the EU Methodology for Statistics on the Information Society, 2023, especially with Regulation (EU) 2019/2152 of the European Parliament and of the Council of 27 November 2019 on European business statistics, repealing 10 legal acts in the field of business statistics.

### Observation units

The observation units are enterprises registered on the territory of the Republic of Croatia for performing the following activities according to the NACE classification:

C - Manufacturing

D, E - Electricity, gas and water supply

F - Construction

G - Wholesale and retail trade, repair of motor vehicles and motorcycles

H - Transport and storage

I - Accommodation and food service activities

J - Information and communications activities

L - Real estate activities

M - Professional, scientific and technical activities

N - Administrative and support service activities

S - Other service activities (group 95.1)

The enterprises were also classified according to the number of persons employed:

- small enterprises (employing 10 – 49 persons)

- medium-sized enterprises (employing 50 – 249 persons)

- large enterprises (employing 250 or more persons).

### Sampling frame and size

The basis for the sampling frame was the Statistical Business Register of the Croatian Bureau of Statistics. The sample consisted of 4 498 enterprises.

### Data collection method

The data were collected via the internet by using the online questionnaire. The reference period for the main variables was the second quarter of 2023. For the questions concerning internet sales, the reference period was 2022.

### Response rates

Out of the whole population of enterprises (13 453), there were 4 498 units taken into the sample. Out of the total sample size, 4 414 units were eligible and 2 840 enterprises took part in the survey. It means that the response rate was 63% and the eligibility rate was 98%. The non-response rate was 37%.

### Weighting

**RIM weighting procedure (iterative proportional fitting – IPF)** was used for the grossing-up. The extrapolation weight was calculated for each participant of the survey, while the calculation method included the NACE category, number of employees and the total turnover of an enterprise.

The source of information on these variables was the Statistical Business Register of the Croatian Bureau of Statistics. The calculated weights enabled the calculation of the data for the whole population of enterprises.

### Publishing

Total data were published for enterprises employing ten or more persons. The Eurostat publishes data of the EU countries for enterprises employing ten or more persons, which enables comparability of the data between the Republic of Croatia and other EU countries.

### Definitions and explanations

**Broadband technologies** are technologies or connections that enable rapid transmission of data, especially films, games and video-conferences via an internet network (e.g. DSL, cable connection, optical connection, leased lines, mobile internet).

**ICT** (Information and Communication Technology) are software and hardware used for data communication (e.g. computer, fax, the internet, fixed mobile phone).

**E-commerce** means transactions conducted over internet protocol-based networks and over other computer-mediated networks. Goods and services are ordered via those networks, but the payment and the ultimate delivery of the goods or services may be conducted online or offline. Orders received via telephone, facsimile, or manually typed e-mails are not counted as electronic commerce.

**EDI** (Electronic Data Interchange) is used for the electronic exchange of data, documents and orders inside an enterprise and between enterprises. Data interchange flows automatically between the computer systems of partners. Standard and encrypted forms are used.

**The internet** refers to networks of the following internet protocols: www, extranet via the internet, EDI via the internet, internet-ready mobile phones.

**Cloud computing** is a technology that enables data storage and data sharing over the internet. Data are stored on servers of a service provider, who also provides connectivity, data storing and data sharing services.

**Website** is a location on the World Wide Web identified by a web address. Collection of web files on a particular subject includes a beginning file called the home page. Information is encoded in specific languages (HyperText Mark-up Language (HTML), XML, Java) readable over a web browser such as Google Chrome, Mozilla Firefox, Opera, or Microsoft Edge.

**Artificial intelligence** refers to systems that use technologies such as text handling, computer vision, speech recognition, natural language creation, machine learning or data analysis by machine learning in order to collect and use data to predict, recommend or determine the best activity to achieve specific goals. Artificial intelligence systems are divided into software (e.g., chatbots and business virtual assistants, face recognition systems, machine translators, machine learning-based analytical tools) and those embedded in some devices (e.g., autonomous robots to automate warehouse operations or production, autonomous drones for production control or package handling).

### Abbreviations

CRM	Customer Relationship Management software
DSL	digital subscriber line
EC	European Community
ERP	Enterprise Resource Planning software
EU	European Union
Eurostat	Statistical Office of the European Union
Gbps	gigabit per second
IT	information technologies
Mbps	megabit per second
NACE	Statistical Classification of Economic Activities in the European Union
NN	Narodne novine, official gazette of the Republic of Croatia



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