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**STATISTICAL SERVICE
OF CYPRUS**

**INFORMATION AND COMMUNICATION
TECHNOLOGIES (ICT) USAGE AND E-COMMERCE
SURVEY IN ENTERPRISES 2023**

SUMMARY RESULTS

Nicosia, November 2023

C O N T E N T S

INFORMATION AND COMMUNICATION TECHNOLOGIES (ICT) USAGE AND E-COMMERCE SURVEY IN ENTERPRISES 2023

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PREFACE

This report presents the results of the survey on Information and Communication Technologies (ICT) Usage and e-Commerce in Enterprises 2023. The aim of the survey is to collect data about the use of information and communication technologies by the enterprises, the access and use of the internet, e-commerce, data utilisation, data sharing, data analytics and trading, the use of Cloud Computing services, the use of Artificial Intelligence and Invoicing. The data are necessary for the implementation of policy programs of both the Government and the Private Sector.

The survey, which is co-funded by the European Union, conforms with the Commission implementing Regulation (EU) 2022/1344 of 1st August, 2022 laying down the technical specifications of data requirements for the topic 'ICT usage and e-commerce' for the reference year 2023, pursuant to Regulation (EU) 2019/2152 of the European Parliament and of the Council. The objective of this Regulation is to establish a common framework for the systematic production of Community statistics on the information society.

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A. SURVEY METHODOLOGY

The survey covers enterprises with 10 or more persons employed in the following statistical codes of economic activities under the classification system NACE Rev.2 (Detailed description in annex):

C	Manufacturing
D	Electricity, Gas, Steam and Air Conditioning Supply
E	Water Supply, Sewerage, Waste Management and Remediation Activities
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 Communication
L	Real Estate Activities
M	Professional, Scientific and Technical Activities
N	Administrative and Support Service Activities
S	Other Service Activities

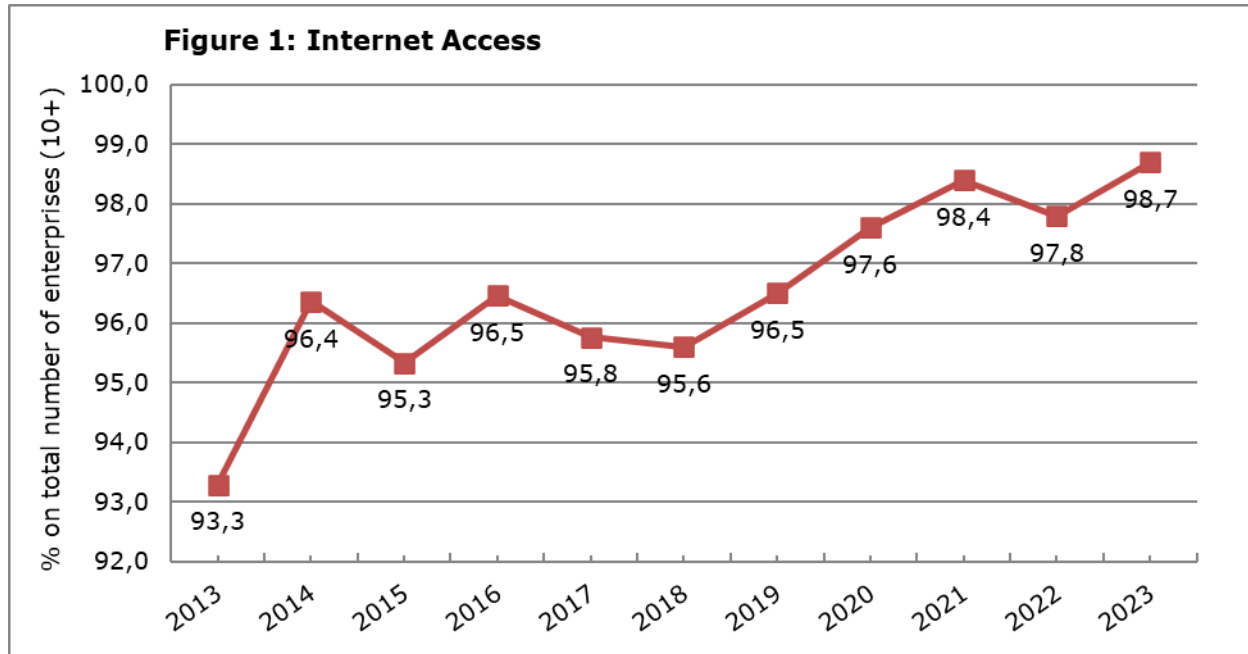
For the year 2023 all of the enterprises with 10 or more persons employed in all the Nace groups defined in the Regulation, were covered (census of enterprises). There were 32 NACE groups and 3 size groups, totaling approximately 4500 enterprises.

The 32 NACE groups (of economic activities) were the following: 10-12, 13-15, 16-18, 19, 20, 21, 22-23, 24-25, 26, 27, 28, 29-30, 31-33, 35, 36-39, 41-43, 45, 46, 47, 49-53, 55, 56, 58-60, 61, 62-63, 68, 69-71, 72, 73-75, 77-78+80-82, 79 και 95.1. The 3 size groups were: Small enterprises (10-49 persons employed), Medium enterprises (50-249 persons employed) and Large enterprises (250+ persons employed).

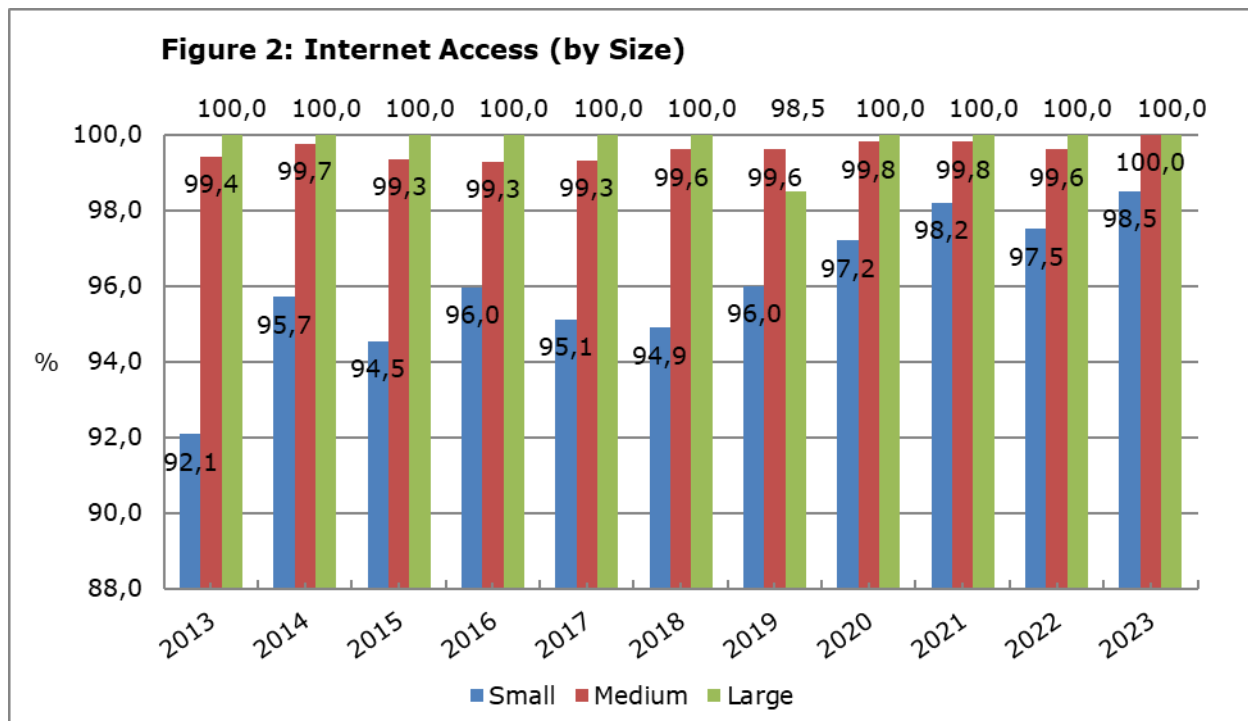
B. MAIN FINDINGS

ACCESS AND USE OF THE INTERNET

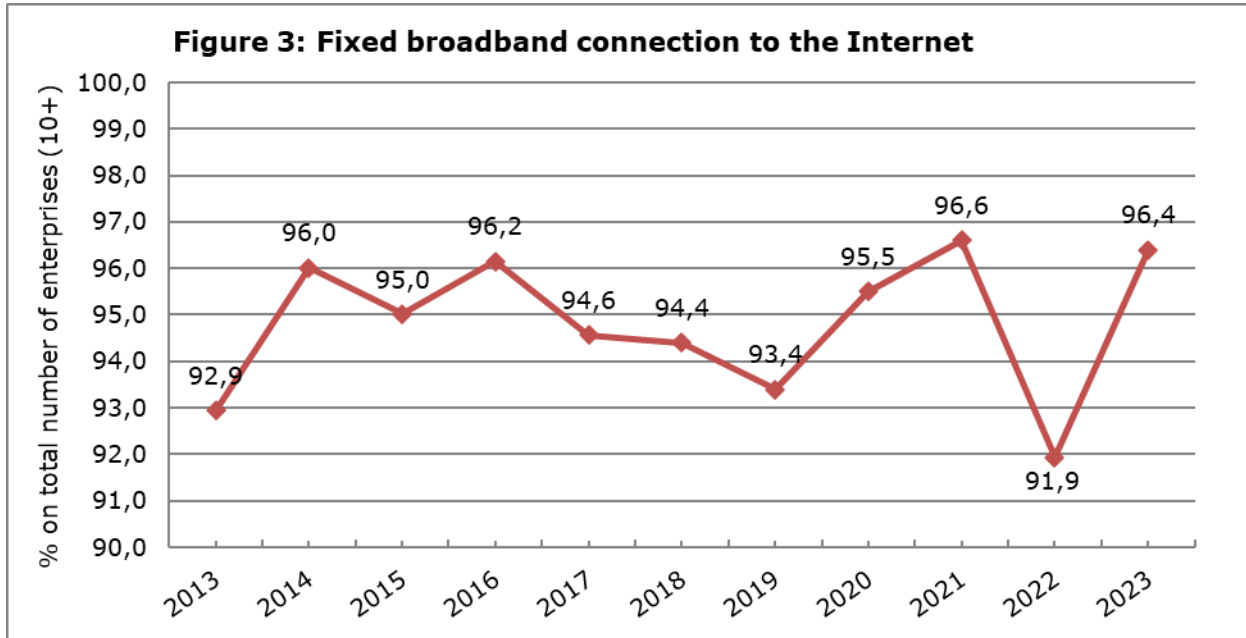
Almost all enterprises in Cyprus with 10 or more persons employed have access to the Internet. In 2023, 98,7% of all enterprises had access to the internet compared to 97,8% in 2022. Over the last decade, internet access in Cyprus amongst enterprises with 10 or more persons employed has constantly been over 90% (Figure 1).



Almost all small enterprises have Internet access (98,5%) compared to 97,5% in 2022. Both, medium and large enterprises have reached 100% for the first time in the last decade (Figure 2).

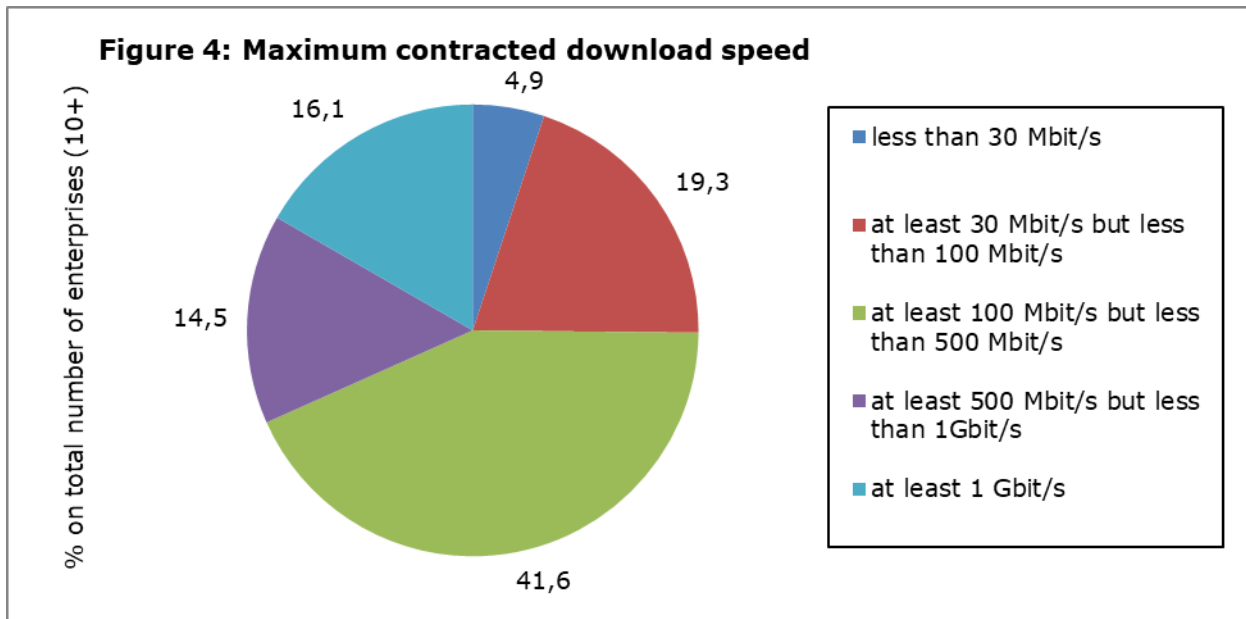


The use of a fixed line connection to the internet (e.g., ADSL, SDSL, VDSL, fiber optics technology (FTTP), cable technology) has always been predominant among enterprises in Cyprus. Since 2013, more than 90,0% of enterprises with 10 or more persons employed used some type of fixed line connection to the Internet. In 2023, 96,4% of enterprises had fixed broadband connection to the Internet compared to 91,9% in 2022 (Figure 3).

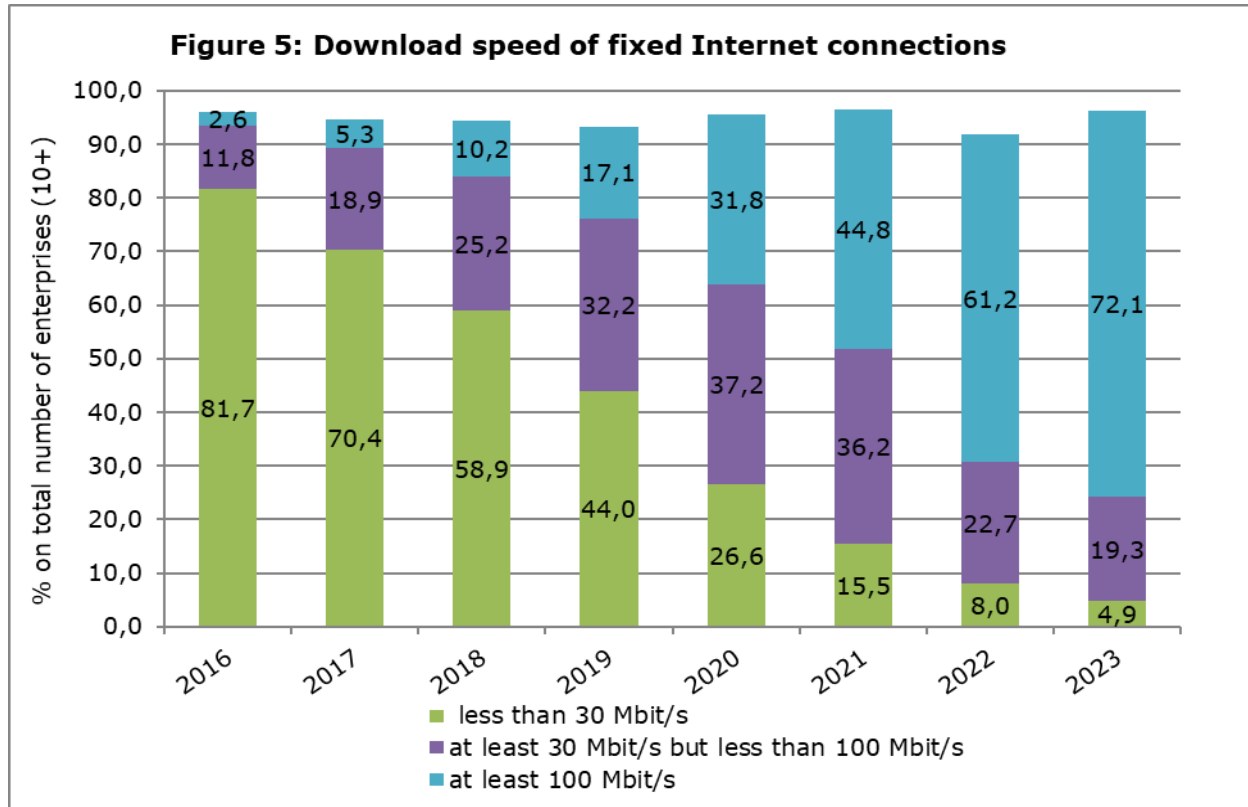


In 2023, the most popular contracted download speed among enterprises in Cyprus was at least 100 Mbit/s but less than 500 Mbit/s (41,6% of all enterprises). The second most popular download speed was at least 30 Mbit/s but less than 100 Mbit/s (19,3%), followed by the enterprises with download speeds of more than 1 Gbit/s with 16,1% and of at least 500 Mbit/s but less than 1 Gbit/s with 14,5%. The least favourite download speed was the less than 30 Mbit/s with 4,9% (Figure 4).

Maximum contracted download speed of the fastest fixed line connection of the enterprise refers to the maximum theoretical speed according to the contractual obligations of the Internet provider at which data can be downloaded.

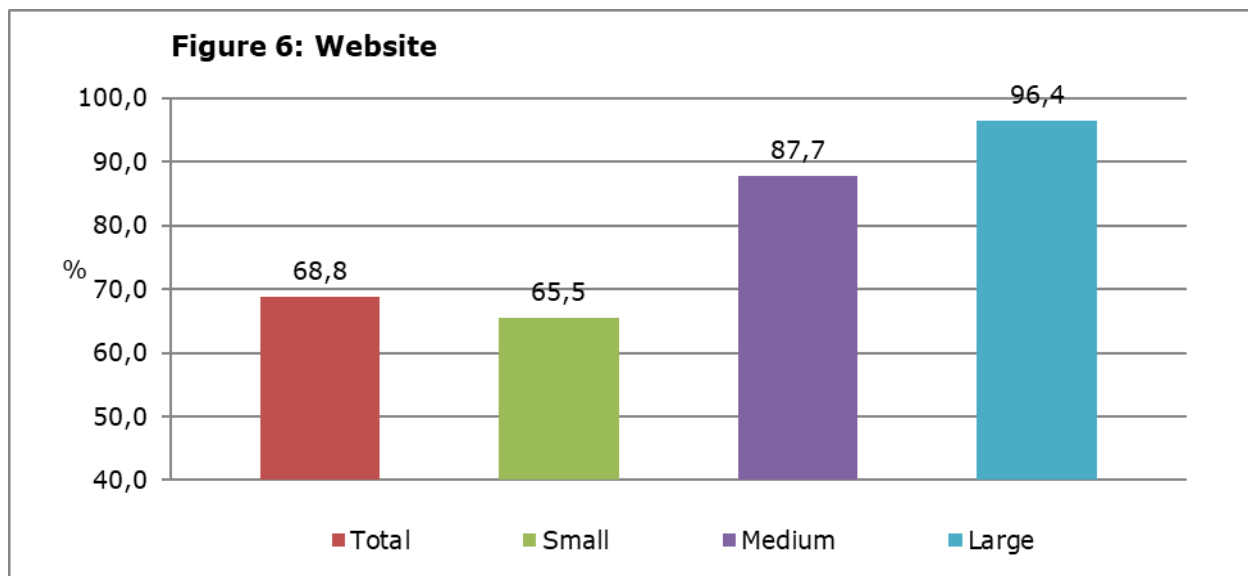


Demand for high-speed internet connections has increased significantly over the last years. High speed internet connections (100 Mbit/s or more) are becoming more popular every year. Over the last eight years, demand for highspeed internet connections has risen from 2,6% in 2016 to 72,1% in 2023. On the other hand, demand for internet speeds of at least 30 Mbit/s but less than 100 Mbit/s and less than 30 Mbit/s has decreased to 19,3% and 4,9% in 2023, compared to 22,7% and 8,0% respectively in 2022 (Figure 5).



USE OF A WEBSITE

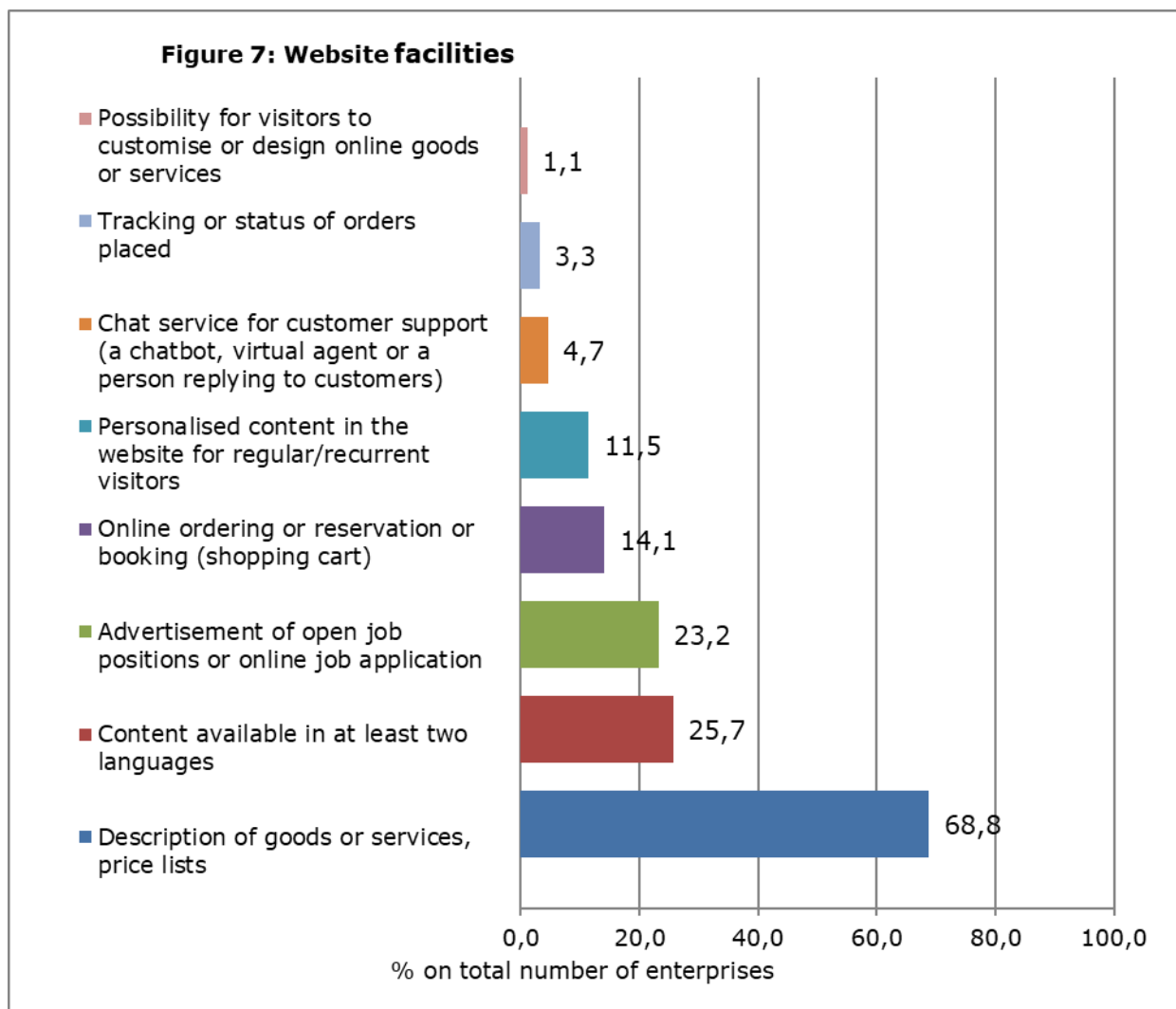
In 2023, 68,8% of all enterprises (10+) have a website. Almost all large enterprises have a website (96,4%). In medium and small enterprises that percentage is 87,7% and 65,5% respectively (Figure 6).



Among the facilities provided by enterprises through their website, the most common is the description of goods and services and price lists (provided by 68,8% of enterprises). 25,7% of enterprises have website content available in at least two languages and 23,2% advertise open job positions or offer online job application facilities (Figure 7).

14,1% of enterprises, offer to their customers the option for online ordering or reservation and 11,5% offer the option for personalized content for repeated visitors (Figure 7).

4,7% of enterprises offer chat service facilities for customer support (chatbot, virtual agent etc.), tracking or status of orders facilities and online customization or design of goods and services are offered by the 3,3% and 1,1% of enterprises respectively (Figure 7).



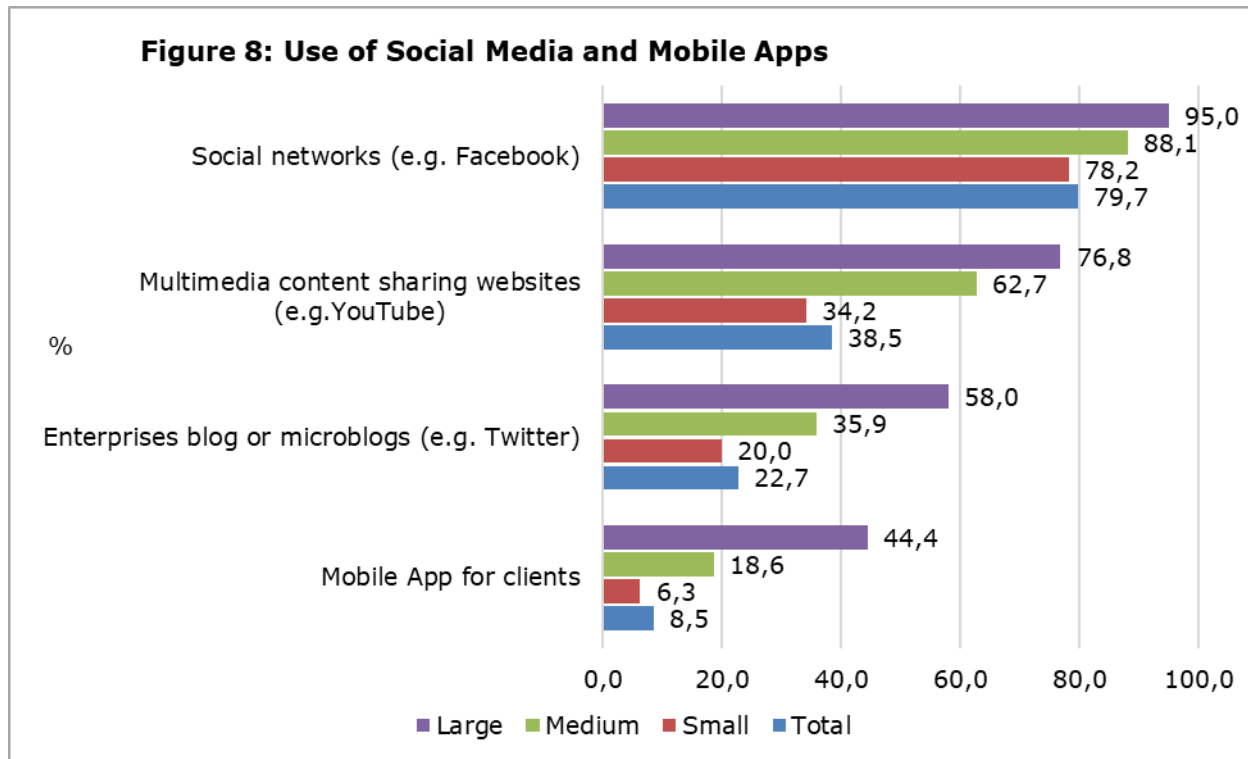
USE OF SOCIAL MEDIA AND MOBILE APPLICATIONS

Enterprises using social media are considered those that have a user profile, an account for business purposes or a user license depending on the requirements and the type of the social media. It is not necessary that enterprises are active on their social media account. They might just provide basic information like location, products, services etc.

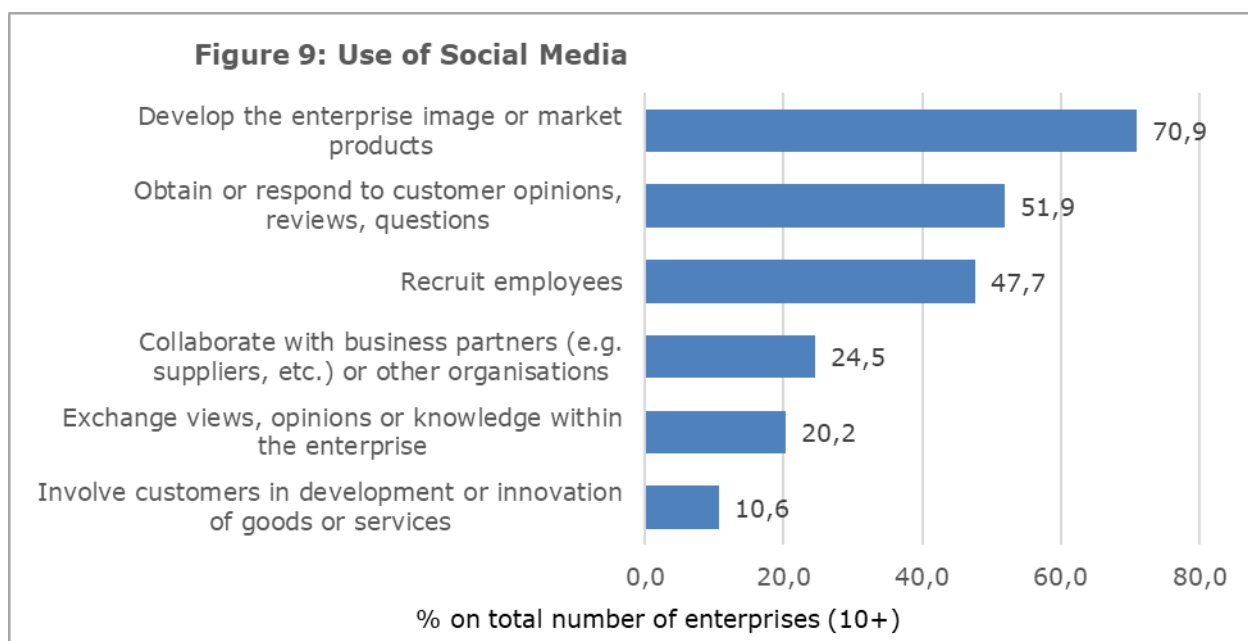
79,7% of all enterprises with 10 or more employed persons use social networks (e.g. Facebook, LinkedIn etc.). In large enterprises that percentage reaches 95,0%, in medium 88,1% and in small 78,2% (Figure 8).

38,5% use multimedia content sharing websites or apps (e.g. YouTube, Instagram, etc.) and 22,7% use blogs or microblogs (e.g. Twitter etc.) (Figure 8).

8,5% of enterprises have a mobile application for clients (e.g. loyalty program, customer support etc.) In large enterprises that percentage reaches 44,4%, in medium 18,6% and in small 6,3% (Figure 8).

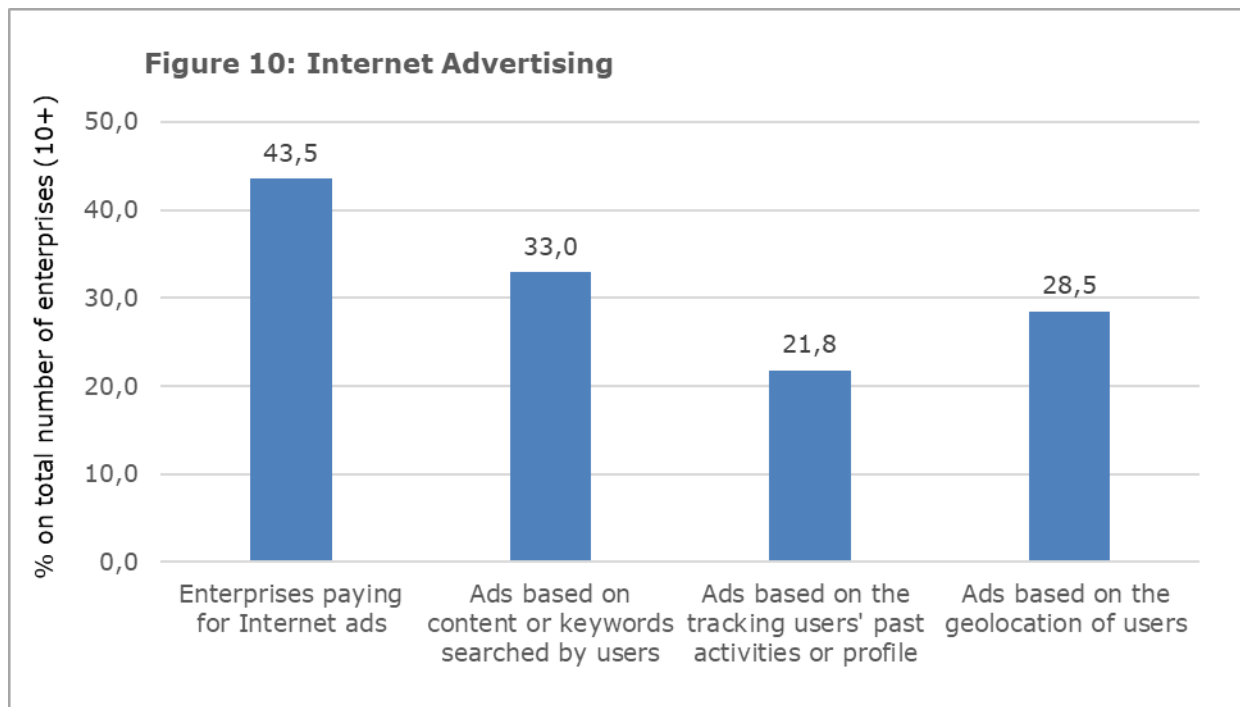


70,9% of enterprises declared that they use social media in order to develop the enterprise's image or market products (e.g. advertising or launching products), 51,9% to obtain or respond to customer opinions (reviews, questions etc.), 47,7% to recruit employees, 24,5% to collaborate with business partners (e.g. suppliers) or other organisations (e.g. public authorities, non-governmental organisations), 20,2% exchange views, opinions or knowledge within the enterprise and 10,6% to involve customers in development or innovation of goods or services (Figure 9).



ADVERTISING OVER THE INTERNET

Advertising over the Internet refers to paid advertisements by the enterprises in order to promote their goods and services. 43,5% of enterprises declared that they pay to advertise on the Internet. 33,0% of enterprises paid for targeted advertisements based on content or keywords searched by the internet users, 28,5% paid for advertisements based on the geolocation of the internet users and 21,8% based on tracking of past activities and profile of the internet users (Figure 10).

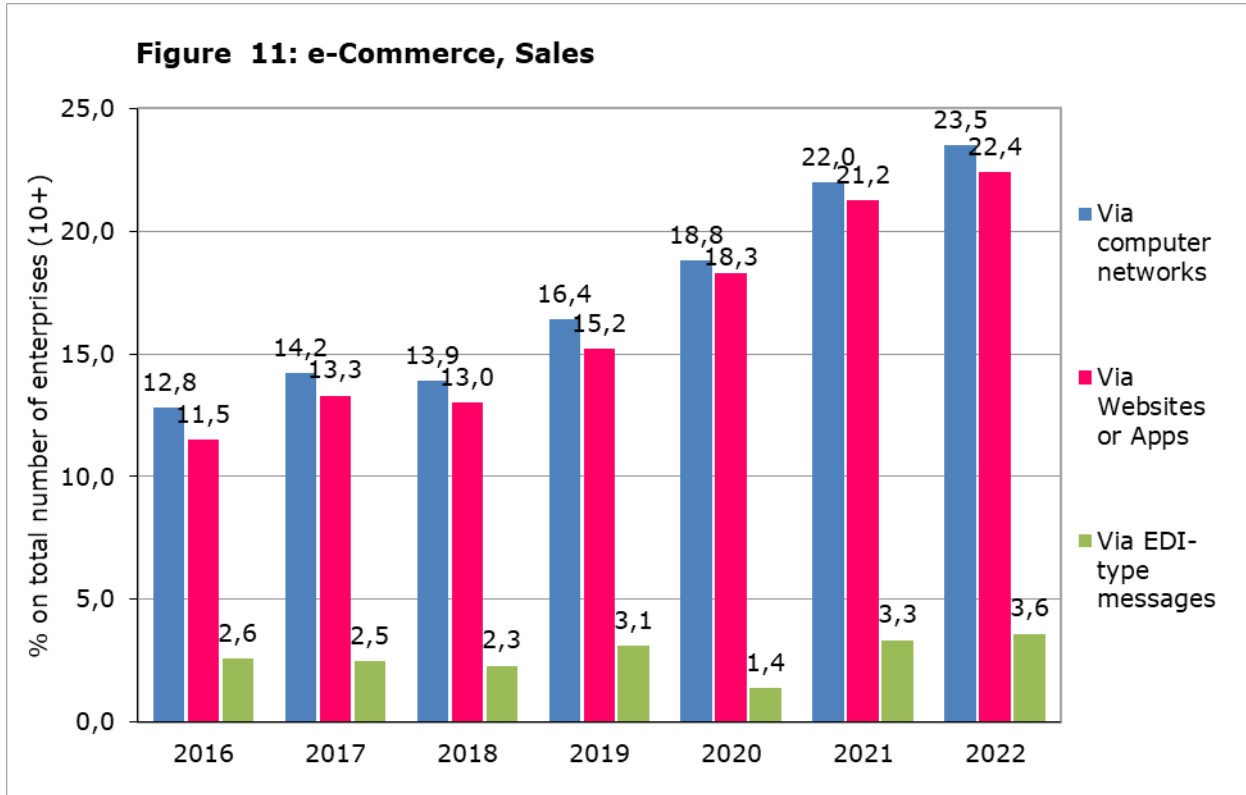


E-COMMERCE

During 2022, 23,5% of the enterprises received orders via computer networks -web sites, apps or EDI (Electronic Data Interchange) type messages excluding manually typed e-mails, compared to 22,0% in 2021. 22,4% of enterprises received orders via websites or "apps" and 3,6% via EDI (Electronic Data Interchange) type messages. The corresponding percentages for 2021 were 21,2% and 3,3% respectively (Figure 11).

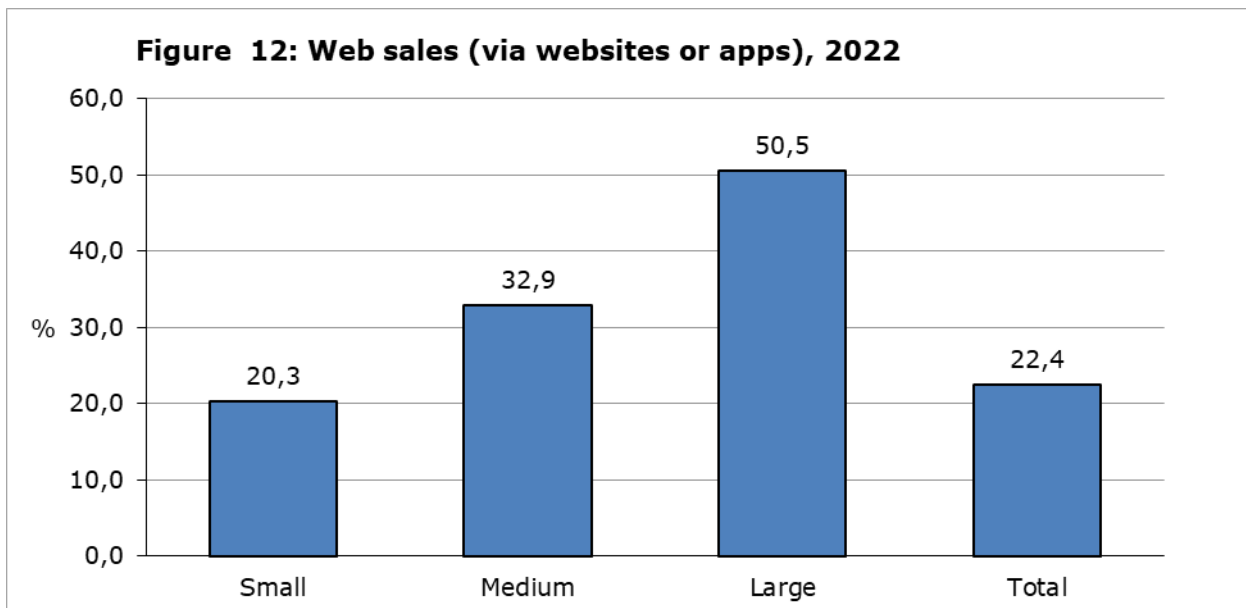
E-commerce over the years demonstrates a steady increase. Since 2016, the number of enterprises receiving orders via computer networks has risen, from 12,8% to 23,5% in 2022 (Figure 11).

When it comes to E-Commerce it is clear that sales via websites or "apps" are clearly the choice of enterprises compared to e-commerce via EDI-type messages.

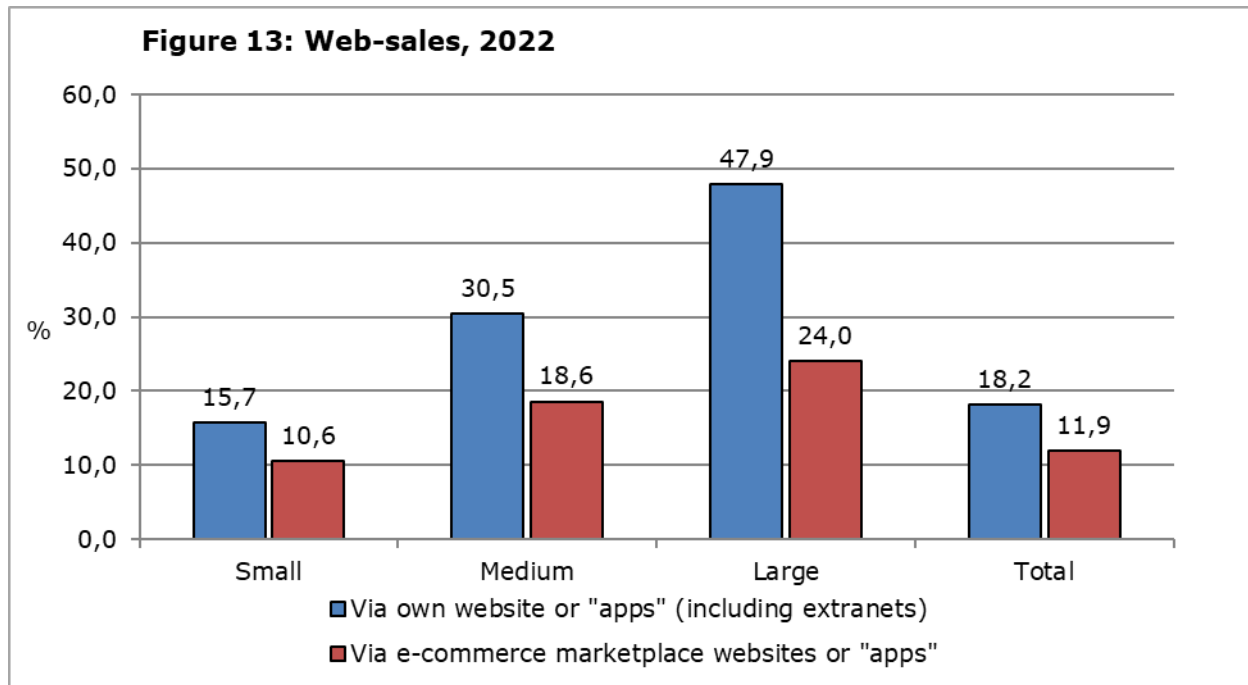


WEB-SALES (VIA WEBSITES OR APPS)

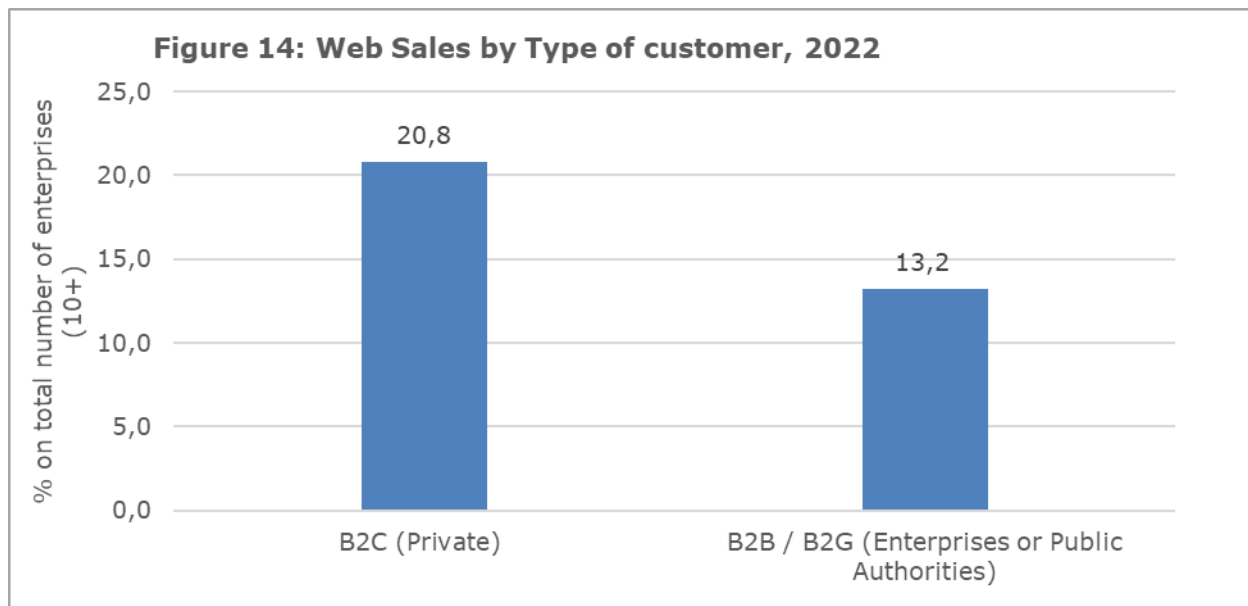
Web-sales cover all orders, bookings and reservations placed by customers via websites or apps of the enterprise or via e-commerce marketplace websites or apps used by several enterprises for trading goods and services. 22,4% of all enterprises had web sales during 2022. One out of five small enterprises (20,3%) received orders via websites or apps during 2022. In medium size enterprises that percentage reaches 32,9% and in large 50,5% (Figure 12).



18,2% of enterprises received orders for goods and services via the enterprise's own websites or apps while 11,9% received orders via e-commerce marketplace websites or apps used by several enterprises for trading products. For large enterprises that percentage reaches 47,9% and 24,0% respectively (Figure 13).

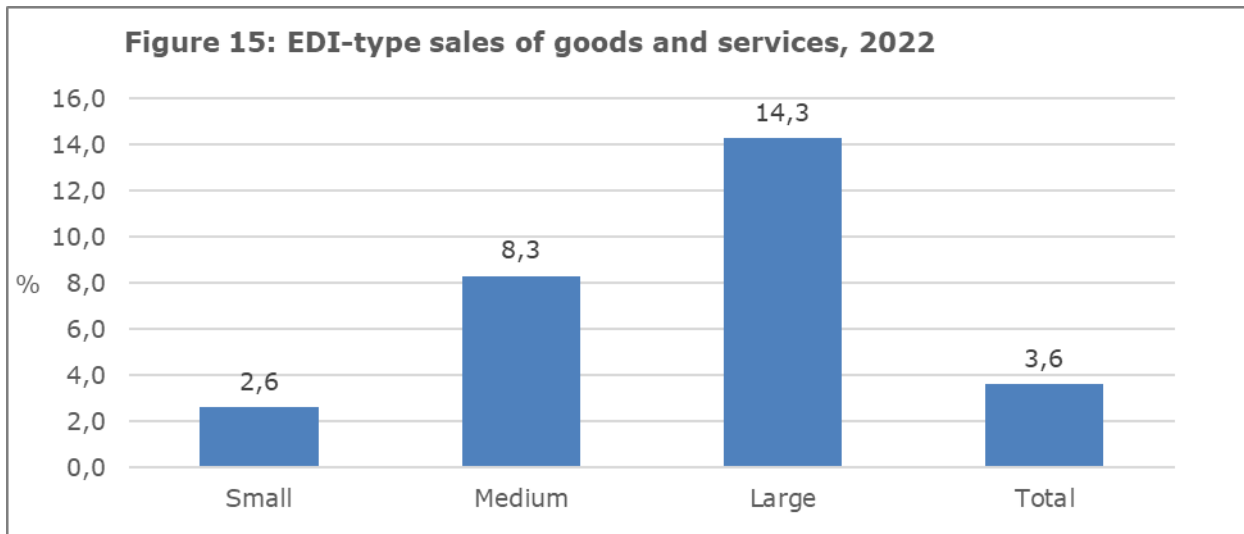


20,8% of enterprises received orders via websites or "apps" from private customers compared to 13,2% of enterprises which received orders from other businesses and/or from the government (Figure 14).



EDI-TYPE SALES

EDI-type sales refer to orders placed by customers via EDI-type messages (Electronic Data Interchange). During 2022, only 3,6% of all enterprises received orders via EDI-type messages. In large enterprises that percentage reaches 14,3%, in medium 8,3% and in small 2,6% (Figure 15).



DATA UTILISATION, SHARING, ANALYTICS AND TRADING

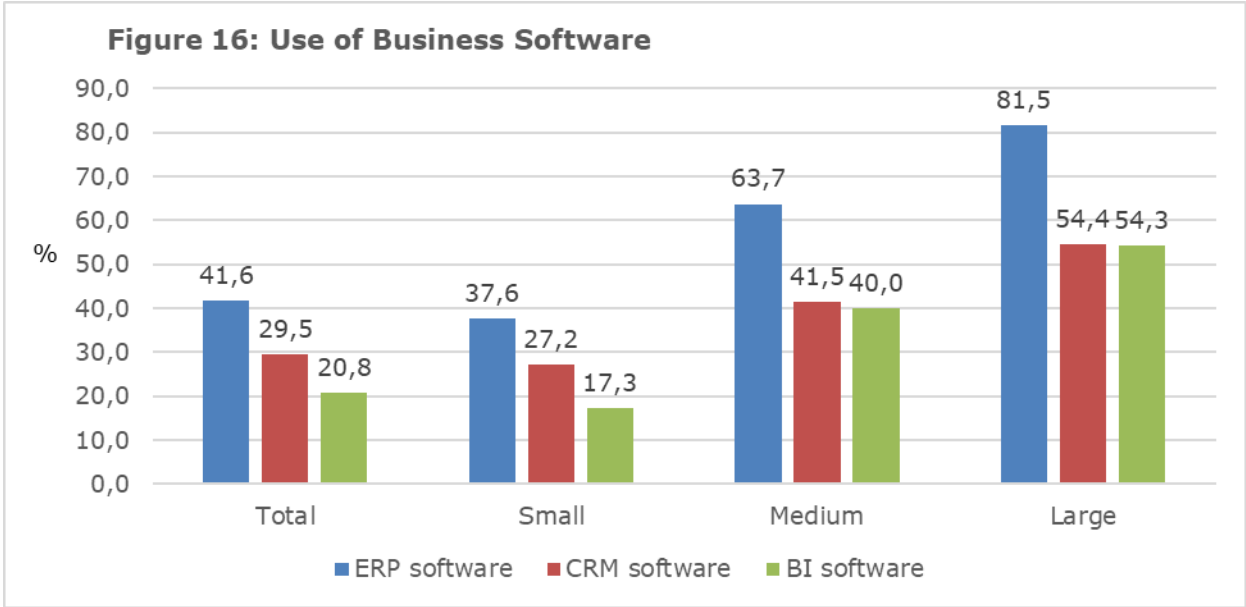
Data utilization, sharing, analytics and trading refers to the use of data by enterprises in various business processes. All activities that are carried out electronically (over the internet) produce data, resulting in an increasingly digital, data-intensive business environment. Enterprises have to deal with immense data flows of complex structured or unstructured data, often updated in real time. Using the available information (data) allows enterprises to create value from the data and gain a competitive advantage.

Enterprise Resource Planning (ERP) consists of one or more sets of software applications that integrate information and processes across the several business functions within an enterprise (e.g. accounting, planning, production, marketing). 41,6% of enterprises use an ERP software (Figure 16).

Customer Relationship Management (CRM) refers to any software application for managing customer information. CRM collects customer information derived from different channels, integrates it in one database, processes and analyses information related to the customers. The customer is at the center of the business activity. 29,5% of all enterprises in Cyprus use a CRM software (Figure 16).

Business Intelligence (BI) software accesses and analyses data (e.g. from data warehouses, data lakes) from internal IT systems and external sources and presents analytical findings in reports, summaries, dashboards, graphs, charts and maps, to provide users with detailed insights for decision-making and strategic planning. 20,8% of all enterprises use BI software (Figure 16).

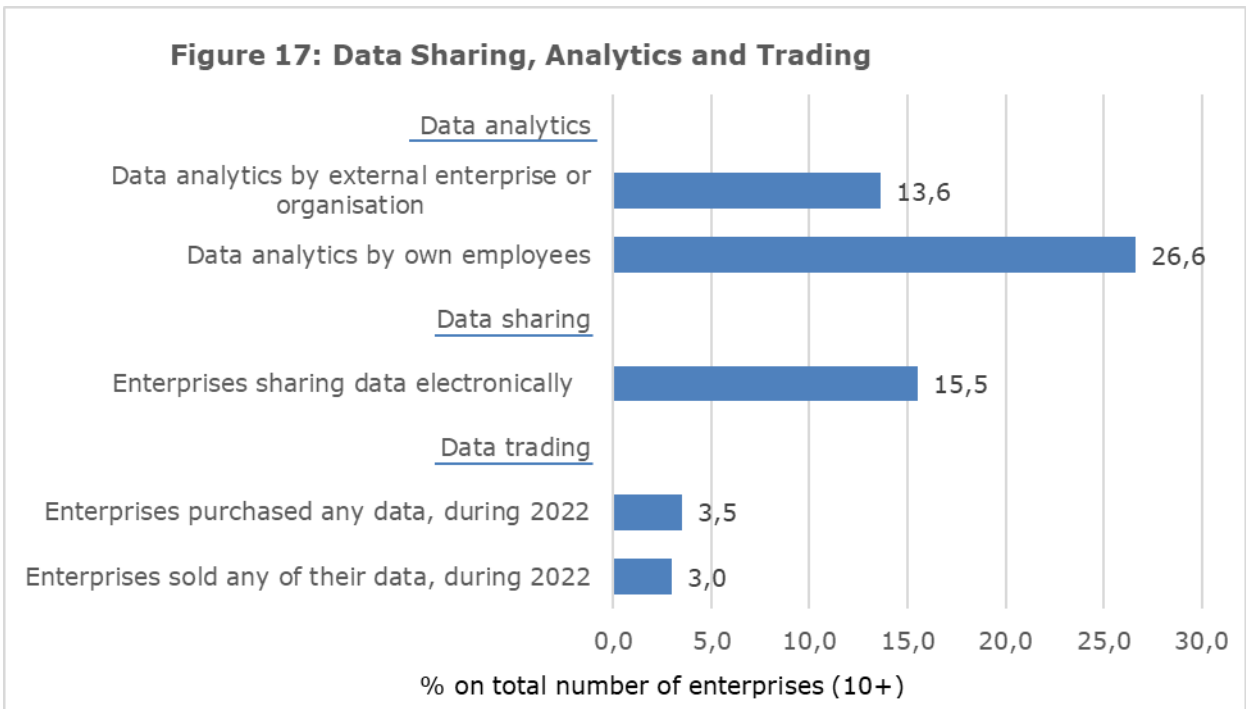
There seems to be a connection between the size of enterprise and the use of any kind of business software (ERP, CRM or a BI software). In small enterprises, ERP, CRM and BI software is used by 37,6%, 27,2% and 17,3% respectively. In medium enterprises that percentages rise to 63,7%, 41,5% and 40,0%, while in large enterprises that figures climb to 81,5%, 54,4%, and 54,3% respectively. The larger the enterprise is, the most likely is to be using any kind of business software (Figure 16).



26,6% of all enterprises declared that the enterprise’s own employees perform data analytics on any data source, internal (from enterprises’ own information systems, sensors, smart meters, own websites or social media) or external data (from other enterprises, government authorities or publicly available data from websites or social media). 13,6% of enterprises choose to hire a service provider (external enterprise or organization) to perform data analytics on their behalf rather than doing so themselves (Figure 17).

15,5% of enterprises stated that they share information electronically with suppliers or customers within the supply chain. Sharing information refers to exchanging any type of information about the availability, production, development and distribution of goods or services (Figure 17).

Data trading amongst enterprises in Cyprus is not that popular. During 2022, only 3,5% of enterprises purchased (access to) any data and 3,0% sold (access to) any of their own data (Figure 17).



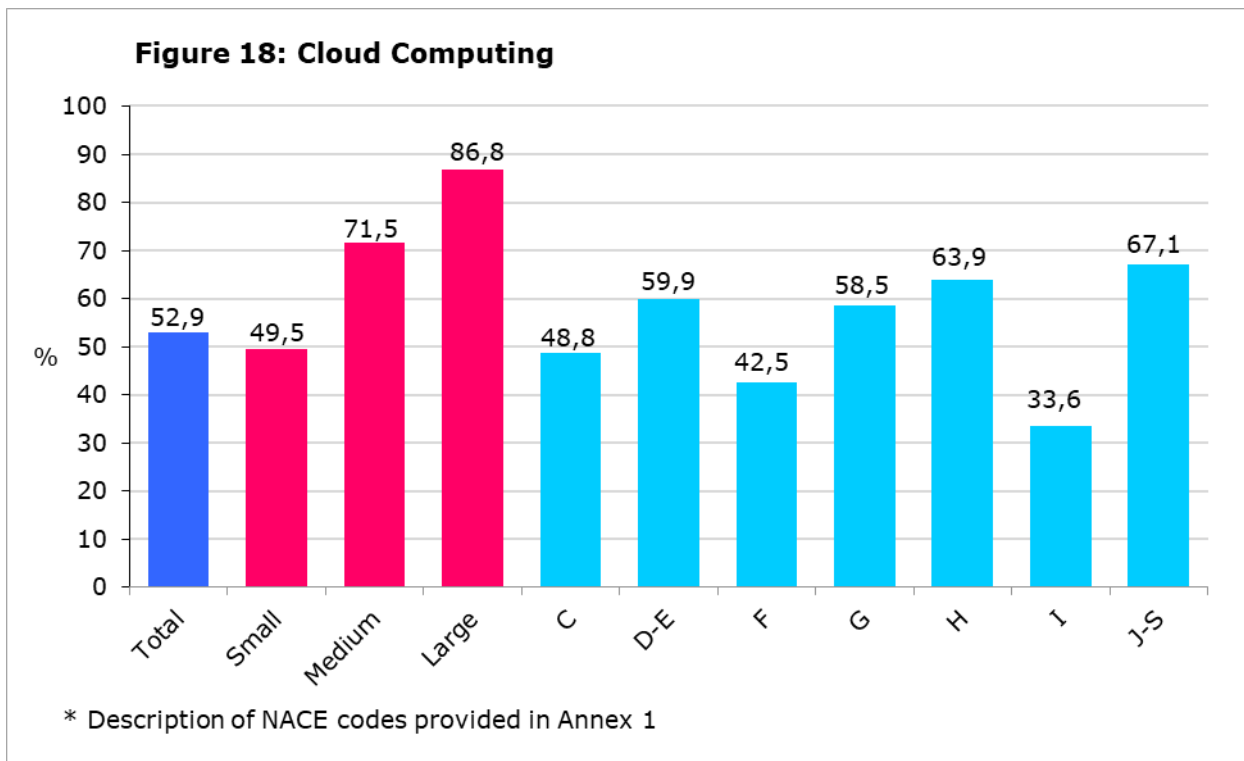
USE OF CLOUD COMPUTING SERVICES

Cloud computing refers to ICT services that are used over the Internet to access software, computing power, storage capacity, etc.

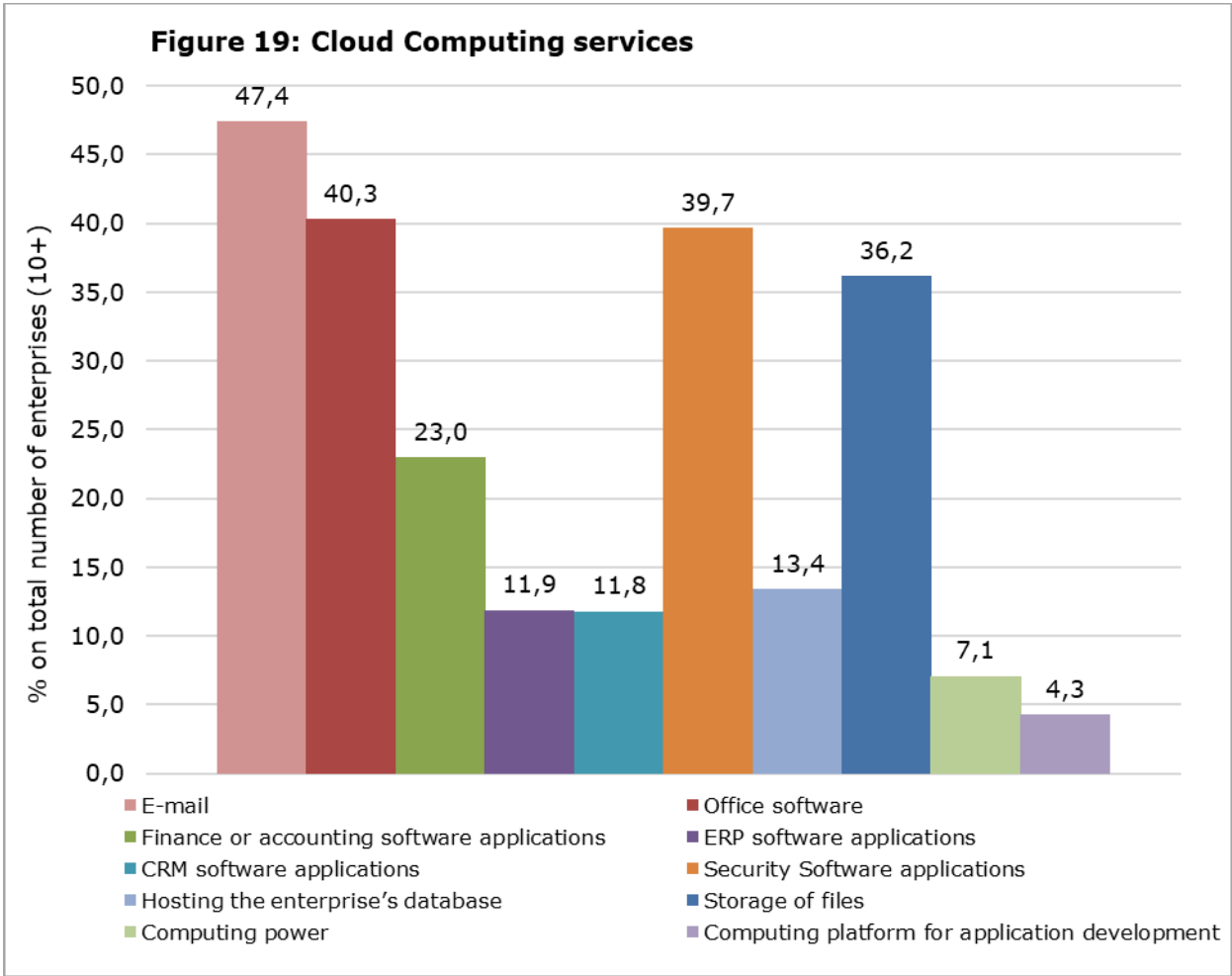
The above-mentioned services have all of the following characteristics:

- can be delivered from servers of service providers
- can be easily scaled up or down (e.g. number of users or change of storage capacity)
- can be used on-demand by the user, at least after the initial set up (without human interaction with the service provider)
- are paid for, either per user, by capacity used, or they are pre-paid.

52,9% of enterprises have bought cloud computing services during 2023. 86,8% of large enterprises, 71,5% of medium enterprises and 49,5% of small enterprises bought cloud computing services in 2023. 67,1% of enterprises belonging in NACE rev.2 Groups J-S (Information and Communication, Real Estate, Professional, Scientific and Technical activities, Administrative and support service activities and Other Service activities) use cloud computing. Transportation and Storage (NACE rev.2 Group H) follows with 63,9% and Electricity and Water Supply, Sewerage, Waste management and Remediation activities (NACE rev.2 Groups D-E) with 59,9% (Figure 18).



The main use of cloud computing services in enterprises is E-mail (e.g. Email Enterprise, Microsoft Exchange Online / Office 365, etc.) as a cloud computing service (47,4%). Office software (e.g. word processors, spreadsheets (e.g. Microsoft Office Cloud), etc.) is second (40,3%). Security Software applications (e.g. antivirus program, network access control) is third (39,7%) and storage of files (e.g. Dropbox, Amazon S3, EMC Mozy, Acronis Online, Diino, etc.) is fourth (36,2%). Finance or Accounting software applications, Hosting of enterprises database, ERP software applications, CRM software applications, computing power to run the enterprise's own software and computing platform providing a hosted environment for application development, testing or deployment follow (Figure 19).

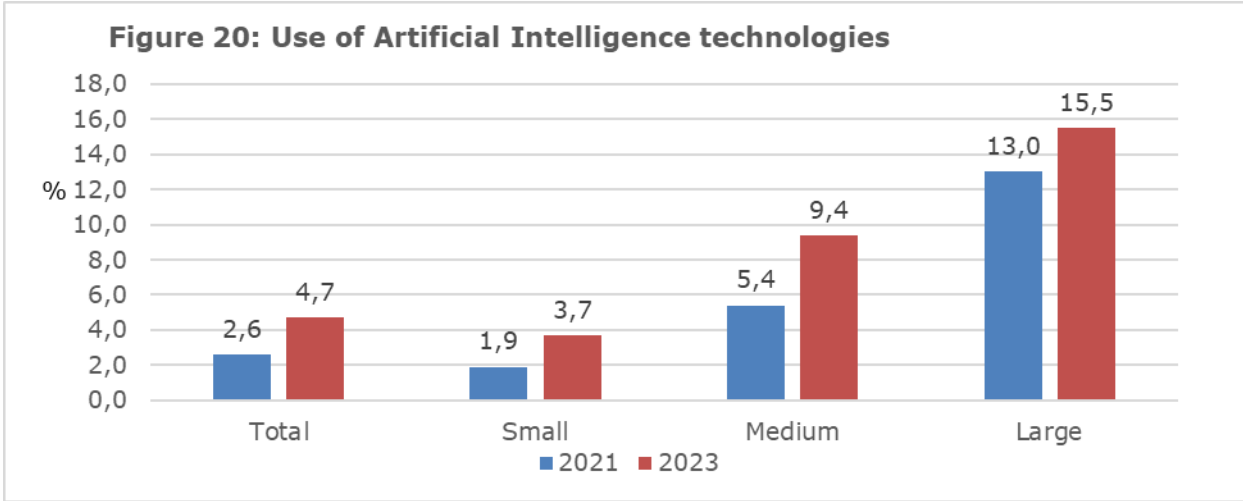


ARTIFICIAL INTELLIGENCE

Artificial Intelligence (AI) refers to systems that use technologies such as text mining, computer vision, speech recognition, natural language generation, machine learning, deep learning to gather and/or use data to predict, recommend or decide, with varying levels of autonomy, the best action to achieve specific goals.

Artificial intelligence systems can be software-based systems like chatbots and business virtual assistants, face recognition systems, speech recognition systems, machine translation software, or can be embedded in devices like autonomous robots for warehouse automation or production assembly works, autonomous drones for production surveillance or parcel handling, etc.

During 2023, in Cyprus 4,7% of enterprises used some kind of Artificial Intelligence system compared to 2,6% in 2021. 15,5% of large size enterprises use AI, 9,4% of medium enterprises and 3,7% of small enterprises (Figure 20).

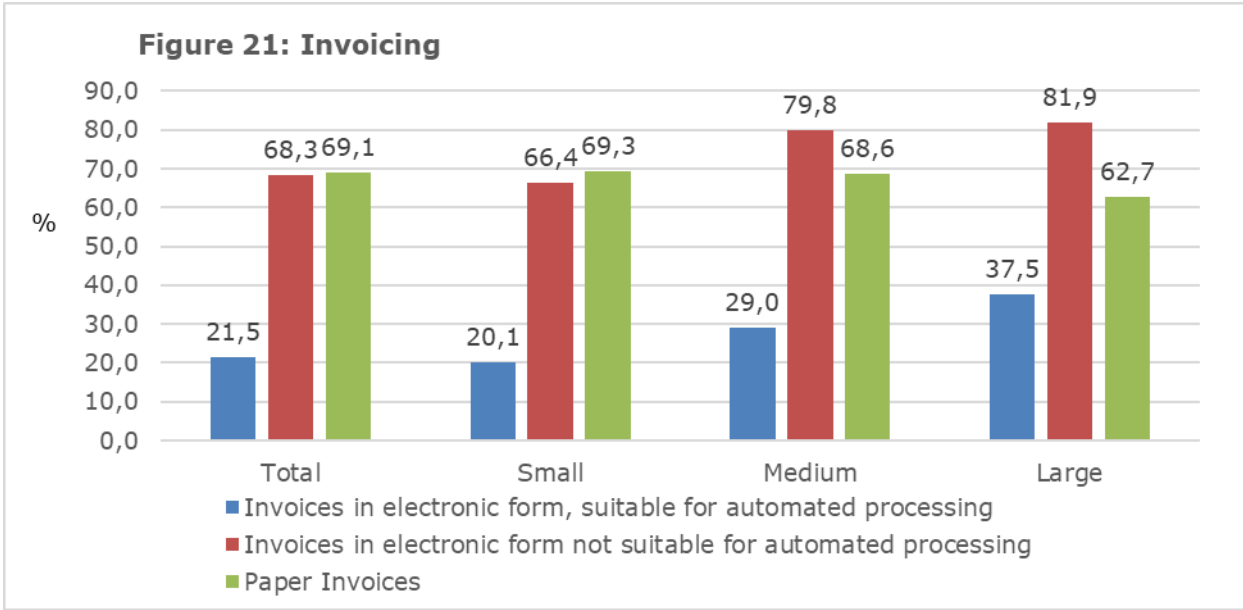


INVOICING

An invoice is a document that contains billing information. There are invoices in paper form and in electronic form. The invoices in electronic form can be:

- (a) In a standard structure suitable for automatic processing. E-invoices may be directly exchanged between suppliers and customers, via service operators or via an electronic banking system. Transmission of invoices in PDF form is excluded.
- (b) Invoices in electronic format not suitable for automatic processing including transmission of invoices in PDF form.

During 2022, 21,5% of enterprises have issued / sent invoices in an electronic form suitable for automatic processing, 68,3% have issued / sent invoices in an electronic form not suitable for automatic processing and 69,1% have issued / sent invoices in paper form (Figure 21).



It is worth mentioning that 57,2% of enterprises issuing invoices in electronic form (in a standard structure suitable for automated processing) in 2022, have issued at least 50% of their invoices in a standard structure suitable for automated processing.

Annex

Description of Economic Activity Codes included in the Survey (NACERev.2)

C MANUFACTURING

- C10 MANUFACTURE OF FOOD PRODUCTS
- C11 MANUFACTURE OF BEVERAGES
- C12 MANUFACTURE OF TOBACCO PRODUCTS
- C13 MANUFACTURE OF TEXTILES
- C14 MANUFACTURE OF WEARING APPAREL
- C15 MANUFACTURE OF LEATHER AND RELATED PRODUCTS
- C16 MANUFACTURE OF WOOD AND OF PRODUCTS OF WOOD AND CORK, EXCEPT FURNITURE;
MANUFACTURE OF ARTICLES OF STRAW AND PLAITING MATERIALS
- C17 MANUFACTURE OF PAPER AND PAPER PRODUCTS
- C18 PRINTING AND REPRODUCTION OF RECORDED MEDIA
- C19 MANUFACTURE OF COKE AND REFINED PETROLEUM PRODUCTS
- C20 MANUFACTURE OF CHEMICALS AND CHEMICAL PRODUCTS
- C21 MANUFACTURE OF BASIC PHARMACEUTICAL PRODUCTS AND PHARMACEUTICAL
PREPARATIONS
- C22 MANUFACTURE OF RUBBER AND PLASTIC PRODUCTS
- C23 MANUFACTURE OF OTHER NON- METALLIC MINERAL PRODUCTS
- C24 MANUFACTURE OF BASIC METALS
- C25 MANUFACTURE OF FABRICATED METAL PRODUCTS, EXCEPT MACHINERY AND EQUIPMENT
- C26 MANUFACTURE OF COMPUTER, ELECTRONIC AND OPTICAL PRODUCTS
- C27 MANUFACTURE OF ELECTRICAL EQUIPMENT
- C28 MANUFACTURE OF MACHINERY AND EQUIPMENT N.E.C.
- C29 MANUFACTURE OF MOTOR VEHICLES, TRAILERS AND SEMI-TRAILERS
- C30 MANUFACTURE OF OTHER TRANSPORT EQUIPMENT
- C31 MANUFACTURE OF FURNITURE
- C32 OTHER MANUFACTURING
- C33 REPAIR AND INSTALLATION OF MACHINERY AND EQUIPMENT

D ELECTRICITY, GAS, STEAM AND AIR CONDITIONING SUPPLY

- D35 ELECTRICITY, GAS, STEAM AND AIR CONDITIONING SUPPLY

E WATER SUPPLY; SEWERAGE, WASTE MANAGEMENT AND REMEDIATION ACTIVITIES

- E36 WATER COLLECTION, TREATMENT AND SUPPLY
- E37 SEWERAGE
- E38 WASTE COLLECTION, TREATMENT AND DISPOSAL ACTIVITIES; MATERIALS RECOVERY
- E39 REMEDIATION ACTIVITIES AND OTHER WASTE MANAGEMENT SERVICES

F CONSTRUCTION

- F41 CONSTRUCTION OF BUILDINGS
- F42 CIVIL ENGINEERING
- F43 SPECIALIZED CONSTRUCTION ACTIVITIES

G WHOLESALE AND RETAIL TRADE; REPAIR OF MOTOR VEHICLES AND MOTORCYCLES

- G45 WHOLESALE AND RETAIL TRADE AND REPAIR OF MOTOR VEHICLES AND MOTORCYCLES
- G46 WHOLESALE TRADE, EXCEPT OF MOTOR VEHICLES AND MOTORCYCLES
- G47 RETAIL TRADE, EXCEPT OF MOTOR VEHICLES AND MOTORCYCLES

H TRANSPORT, STORAGE AND COMMUNICATION

- H49 LAND TRANSPORT AND TRANSPORT VIA PIPELINES
- H50 WATER TRANSPORT

H51 AIR TRANSPORT
H52 WAREHOUSING AND SUPPORT ACTIVITIES FOR TRANSPORTATION
H53 POSTAL AND COURIER ACTIVITIES

I ACCOMODATION AND FOOD SERVICE ACTIVITIES

I55 ACCOMODATION
I56 FOOD AND BEVERAGE SERVICE ACTIVITIES

J INFORMATION AND COMMUNICATION

J58 PUBLISHING ACTIVITIES
J59 MOTION PICTURE, VIDEO AND TELEVISION PROGRAMME PRODUCTION, SOUND
RECORDING AND MUSIC PUBLISHING
J60 PROGRAMMING AND BROADCASTING ACTIVITIES
J61 TELECOMMUNICATIONS
J62 COMPUTER PROGRAMMING, CONSULTANCY AND RELATED ACTIVITIES
J63 INFORMATION SERVICE ACTIVITIES

L REAL ESTATE ACTIVITIES

L68 REAL ESTATE ACTIVITIES

M PROFESSIONAL, SCIENTIFIC AND TECHNICAL ACTIVITIES

M69 LEGAL AND ACCOUNTING ACTIVITIES
M70 ACTIVITIES OF HEAD OFFICES; MANAGEMENT CONSULTANCY ACTIVITIES
M71 ARCHITECTURAL AND ENGINEERING ACTIVITIES; TECHNICAL TESTING AND ANALYSIS
M72 SCIENTIFIC RESEARCH AND DEVELOPMENT
M73 ADVERTISING AND MARKET RESEARCH
M74 OTHER PROFESSIONAL, SCIENTIFIC AND TECHNICAL ACTIVITIES
M75 VETERINARY ACTIVITIES

N ADMINISTRATIVE AND SUPPORT SERVICE ACTIVITIES

N77 RENTAL AND LEASING ACTIVITIES
N78 EMPLOYMENT ACTIVITIES
N79 TRAVEL AGENCY, TOUR OPERATOR RESERVATION SERVICE AND RELATED ACTIVITIES
N80 SECURITY AND INVESTIGATION ACTIVITIES
N81 SERVICES TO BUILDINGS AND LANDSCAPE ACTIVITIES
N82 OFFICE ADMINISTRATIVE, OFFICE SUPPORT AND OTHER BUSINESS SUPPORT ACTIVITIES

S OTHER SERVICE ACTIVITIES

S951 REPAIR OF COMPUTERS AND PERSONAL AND COMMUNICATION EQUIPMENT