



**STATISTICAL SERVICE
OF CYPRUS**

**INFORMATION AND COMMUNICATION
TECHNOLOGIES (ICT) USAGE AND E-COMMERCE
SURVEY IN ENTERPRISES
2016**

SUMMARY RESULTS

Nicosia, December 2016

C O N T E N T S

INFORMATION AND COMMUNICATION TECHNOLOGIES (ICT) USAGE AND E-COMMERCE SURVEY IN ENTERPRISES 2016

	Page
Preface	2
A. Survey Methodology.....	3
B. Main Findings	
Use of Computers.....	4
ICT specialist and skills.....	4-6
Access and Use of the Internet.....	7-11
Use of Cloud Computing services.....	12-13
Big Data Analysis.....	14-15
Invoicing	15-16
e-Commerce	17
Annex: Description of NACE codes included in the survey NACE Rev. 2.....	21

PREFACE

This report presents the results of the survey on ICT Usage and e-Commerce in Enterprises 2016. The aim of the survey is to collect data about the use of information and communication technologies by the enterprises, the use of computers, the employment of ICT specialists, the access and use of the Internet, the use of cloud computing services, big data analysis, invoicing and e-commerce. These data are necessary for the implementation of policy programs of both the Government and the Private Sector.

The survey, which is cofounded by the European Community, conforms to the regulation (EC) No. 808/2004 of the European Parliament and of the Council of 21 April 2004 concerning Community statistics on the information society. The objective of this Regulation is to establish a common framework for the systematic production of Community statistics on the information society.

The report was prepared by Mr. Constantinos Mina, Statistics Officer, under the supervision of Mr. Costas Diamantides, Senior Statistics Officer, Head of Methodology, Statistical Dissemination, Prices, Labour Market, Labour Costs and ICT Surveys Division.

A. SURVEY METHODOLOGY

The survey covers enterprises with 10 or more employees in the following statistical codes of economic activities 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, motorcycles and personal and household goods
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

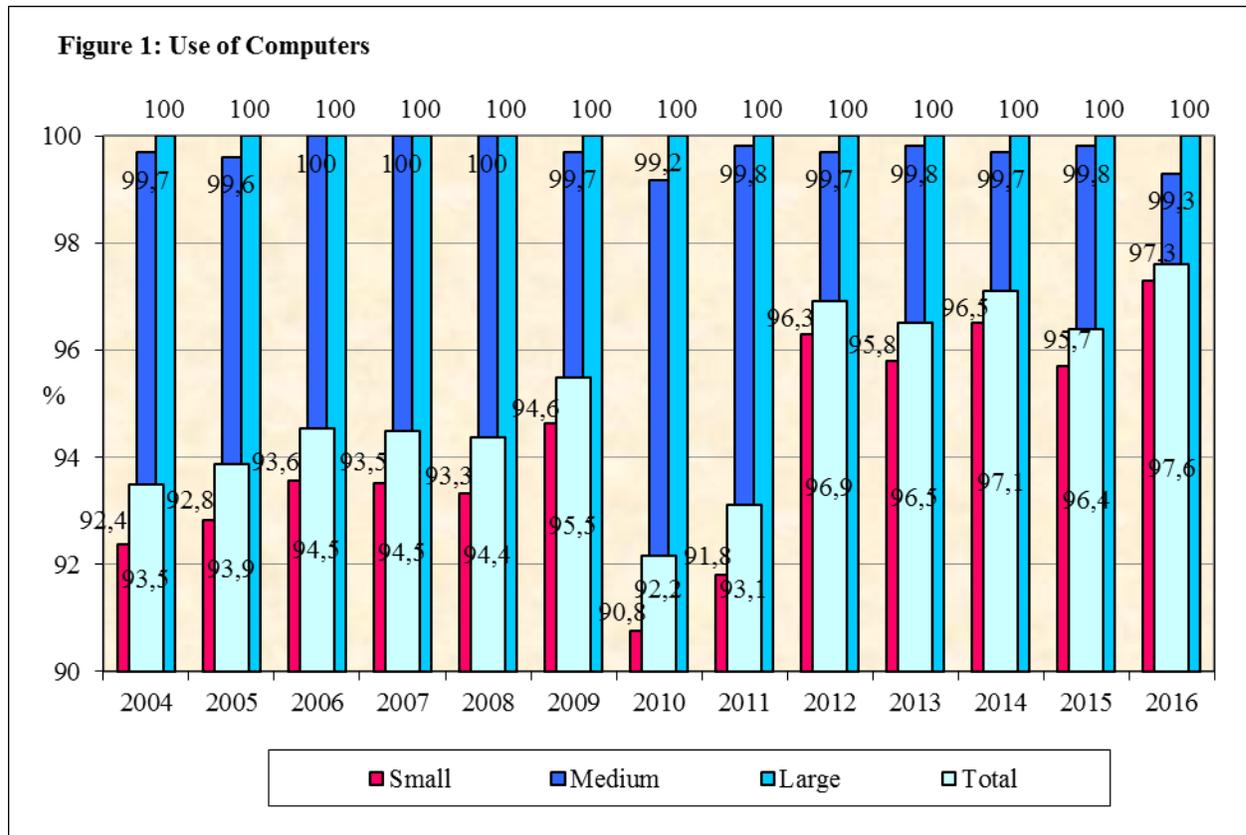
The sampling method used was stratified random sampling. Two variables were used for stratification, NACE group and size of the enterprise. There were 16 NACE groups and 3 size groups.

The 16 NACE groups (of economic activities) were the following: 10-18, 19-23, 24-25, 26-33, 35-39, 41-43, 45-47, 49-53, 55, 56, 58-63, 68, 69-74, 77-78 and 80-82, 79 and 95. The 3 size groups were: Small enterprises (10-49 employees), Medium enterprises (50-249 employees) and Large enterprises (250+ employees).

B. MAIN FINDINGS

USE OF COMPUTERS

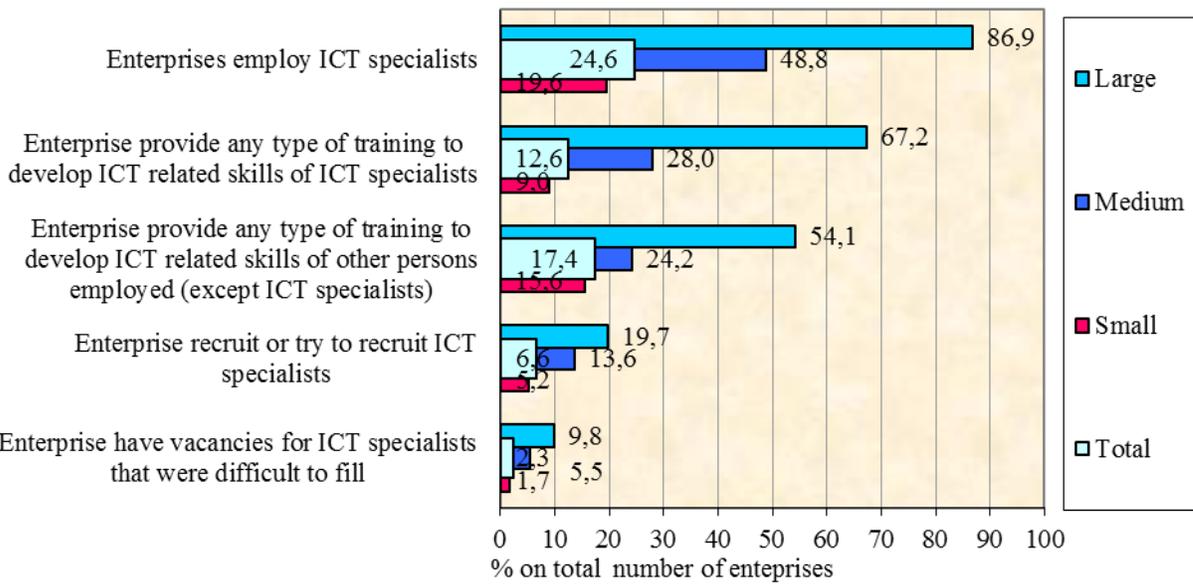
In 2016, computers were used in almost all enterprises in Cyprus with 50 or more employees (i.e. medium and large enterprises). The percentage of small enterprises (10 – 49 employees) using computers increased to 97,3% compared to 95,7% in 2015. The percentage of enterprises with 10 or more employees using computer increased to 97,6% in 2016 compared with 96,4% in 2015 (Figure 1).



ICT SPECIALISTS AND SKILLS

The main job of an information and communications technology (ICT) specialist is to develop, design, maintain, operate and service systems and applications used to store, retrieve, and send data. The vast majority of large enterprises (86,9%) employ ICT specialists while only 19,6% of small enterprises employ ICT specialists. Only 6,6% recruited or tried to recruit ICT specialists in 2015. 2,3% of all enterprises faced difficulties to fill the vacancies. The percentage of enterprises that provide any type of training to develop ICT related skills to either ICT specialists or other person employed remains low (12,6% and 17,4% respectively). In large enterprises the corresponding percentages are 67,2% (ICT specialists) and 54,1% (other persons employed) (Figure 2).

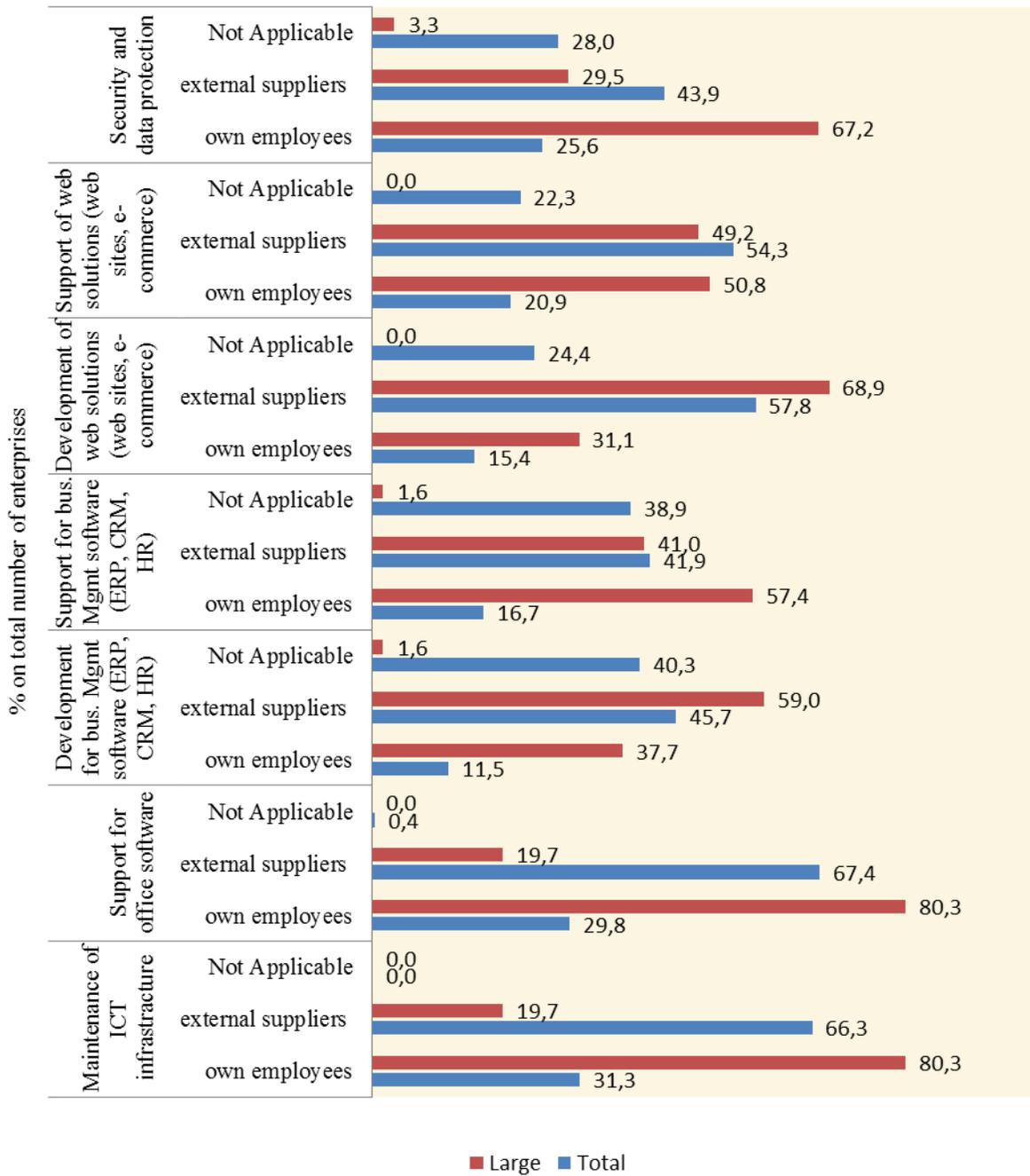
Figure 2: ICT specialists and skills



Enterprises employing 10 or more employees prefer to outsource ICT functions rather than using their own employees. All ICT functions, maintenance of ICT infrastructure, support for office software, development of business management software/systems, support for business management software/systems, development of web solutions, support for web solutions and security and data protection were mainly outsourced (Figure 3).

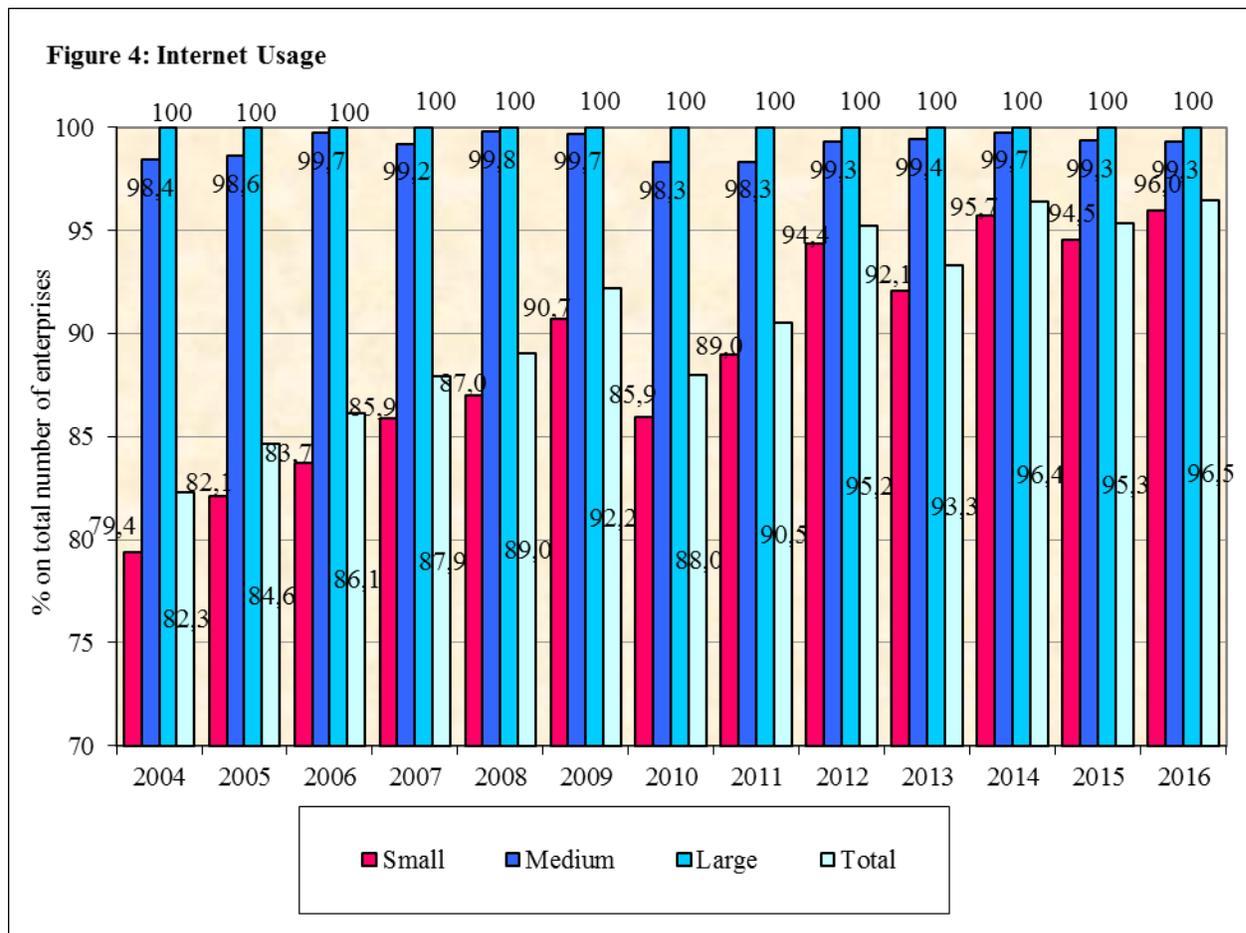
For large enterprises though, maintenance of ICT infrastructure, support for office software, support for business management software (ERP, CRM, HR), support of web solutions (web sites, e-commerce) and security and data protection are performed mainly by the enterprise's own employees (including those employed in parent or affiliate enterprise) while only the development for business management software (ERP, CRM, HR) and the development of web solutions (web sites, e-commerce) are performed mainly by external suppliers (Figure 3).

Figure 3: ICT specialists and functions



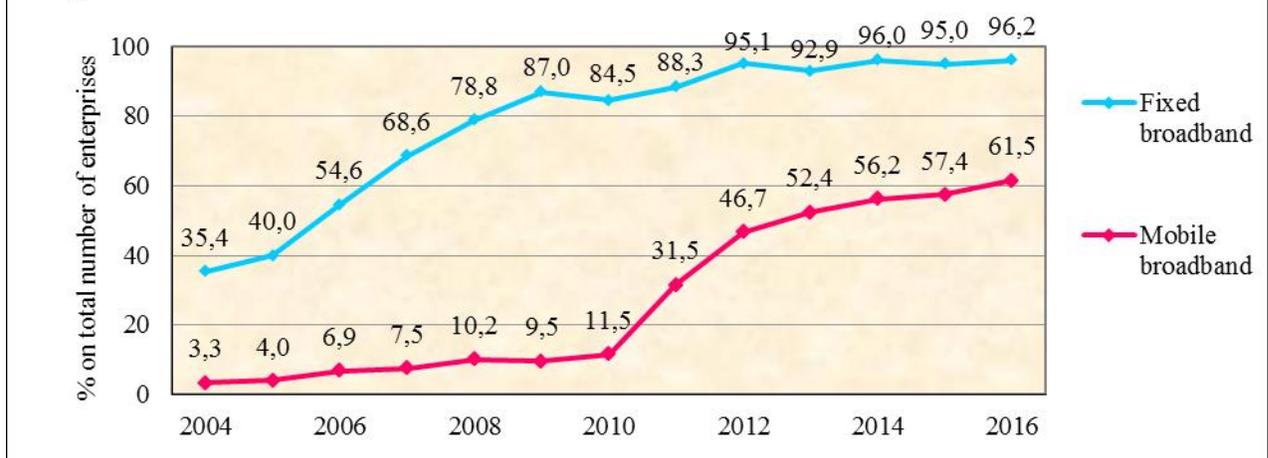
ACCESS AND USE OF THE INTERNET

Over the last years, Internet usage in enterprises remains stable over 95%. 96,5% of all enterprises had access to the Internet in 2016. The Internet usage was almost 100% in all medium and large enterprises (Figure 4).



There was a significant increase in the usage of broadband connections to the Internet over the last 5 years. Broadband connection refers to DSL, ADSL, SDSL, VDSL, fiber optics technology (FTTH), cable technology, satellite etc. In 2016, 96,2% of all enterprises used some type of fixed broadband connection to the Internet compared to 95,0% in 2015. A significant increase is also observed in mobile connection in 2016 (61,5%) compared to 57,4% in 2015 (Figure 5).

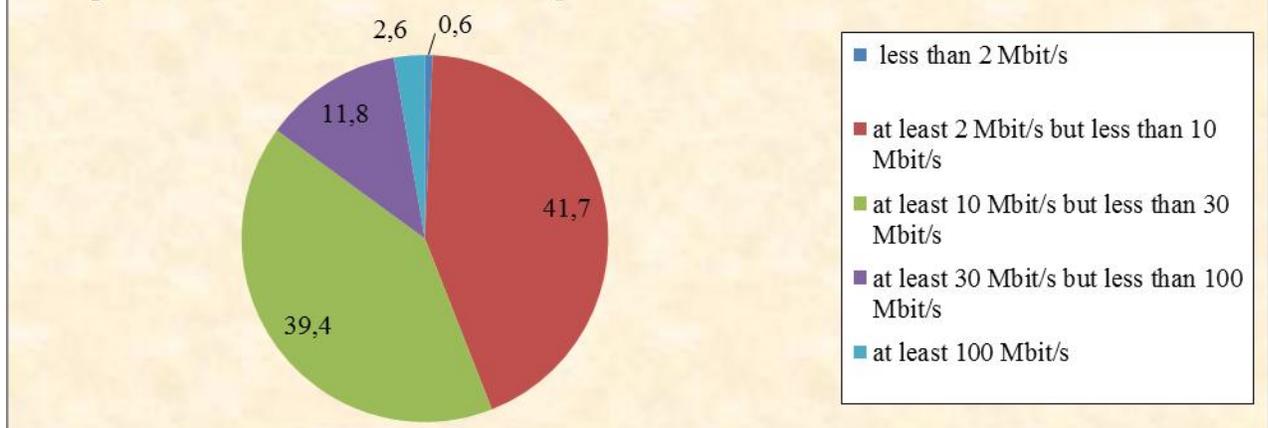
Figure 5: Connection to the Internet



Over the last 6 years there has been a steady increase of demand for high speed internet connections. High speed internet connections (10Mbit/s or more) are increasing constantly over the last years and have risen from 4,7% in 2011 to 53,8% in 2016.

The most popular contracted download speed in Cyprus (41,7% of all enterprises) was between 2 and 10 Mbit/s. Enterprises with download speed of more than 10 Mbit/s but less than 30Mbit/s have increased to 39,4% compared to 25,1% in 2015. Maximum contracted speed refers to the maximum theoretical speed according to the contractual obligations of the Internet provider at which data can be downloaded (Figure 6).

Figure 6: Maximum contracted download speed of the Internet

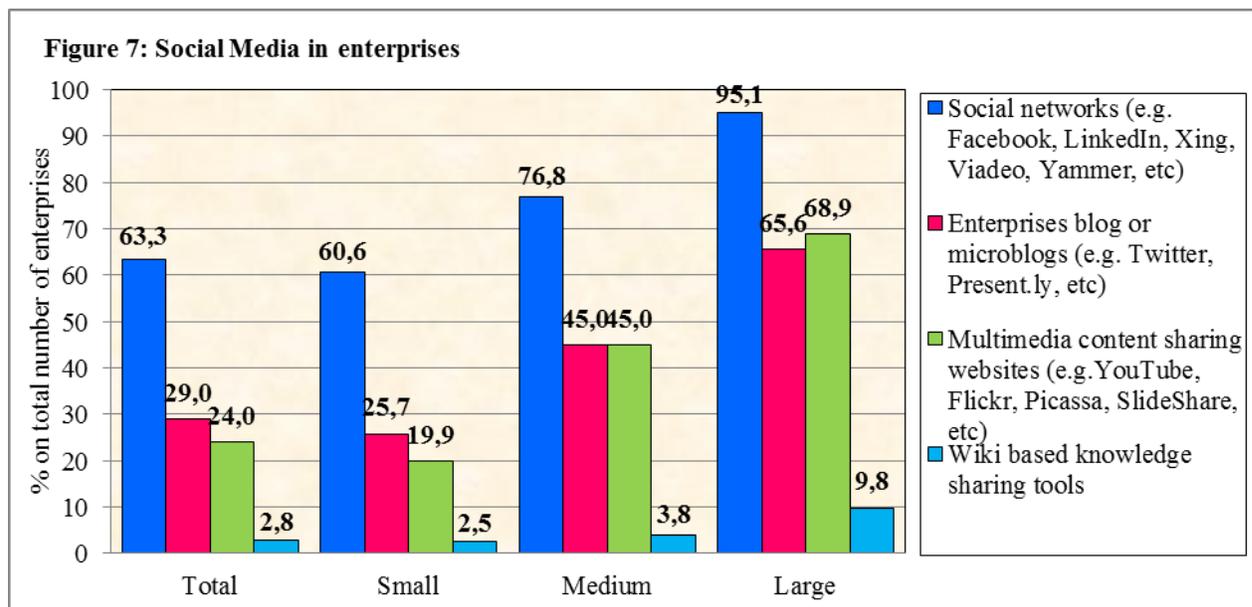


USE OF SOCIAL MEDIA

Use of Social Media refers to the usage of applications based on Internet technology or communication platforms for connecting, creating and exchanging content online, with customers, suppliers, or partners, or within the enterprise. Enterprises using social media are considered those that have a user profile, an account or a user license depending on the requirements and the type of the social media. 64,4 % of the all enterprises use Social Media.

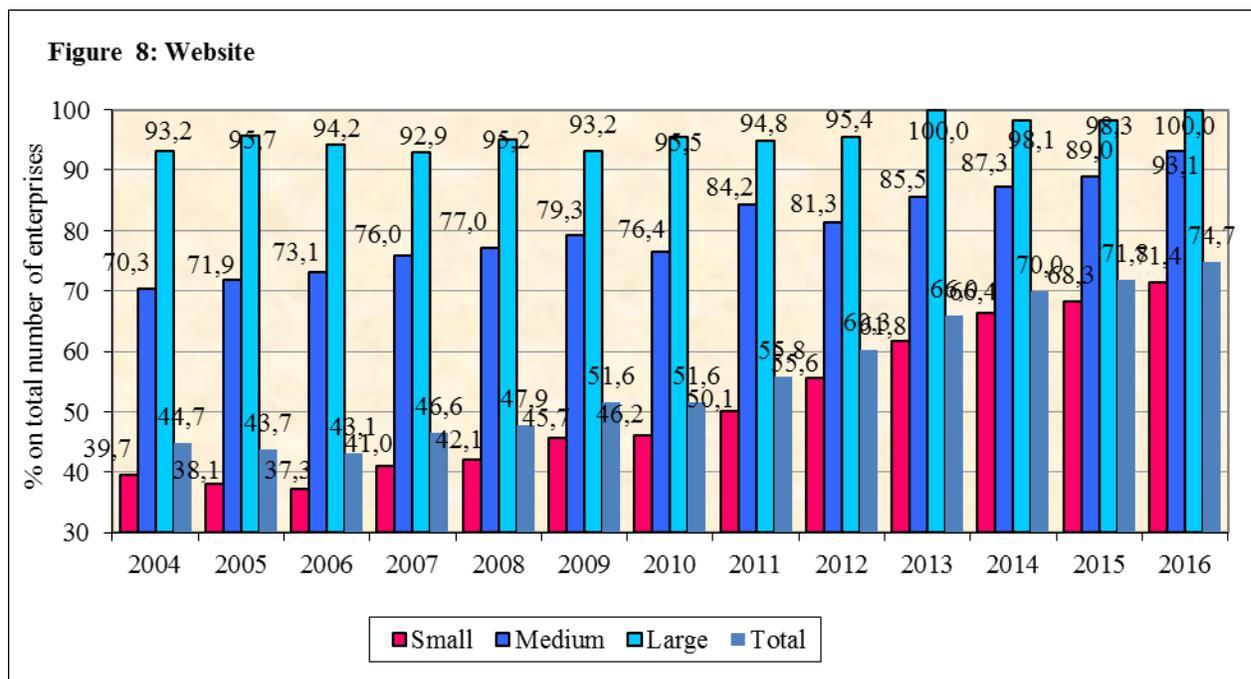
Social networks (e.g. Facebook, LinkedIn etc.) are the most popular in enterprises (63,3%). Enterprise's blogs or microblogs like Twitter come second (29,0%) and multimedia content sharing websites such as YouTube, Flickr, etc, are third in enterprises preferences (24,0%). Wiki based knowledge sharing tools are fourth (2,8%) (Figure 7).

In large enterprises social networks come first with 95,1%, multimedia content sharing websites come second with 68,9%, blogs or microblogs third with 65,6% and wiki based knowledge sharing tools fourth with 9,8% (Figure 7).



USE OF A WEBSITE

Compared to 2015, a significant increase is observed in the percentage of enterprises that have a website (74,7% in 2016 from 71,8% in 2015). It is worth mentioning that in large enterprises that percentage reaches 100%. Over the last years a steady increase can be observed in the number of enterprises having a website (Figure 8).



Among the facilities provided by enterprises through their website, the most common is the description of goods and services and price lists (provided by 74,3% of all enterprises).

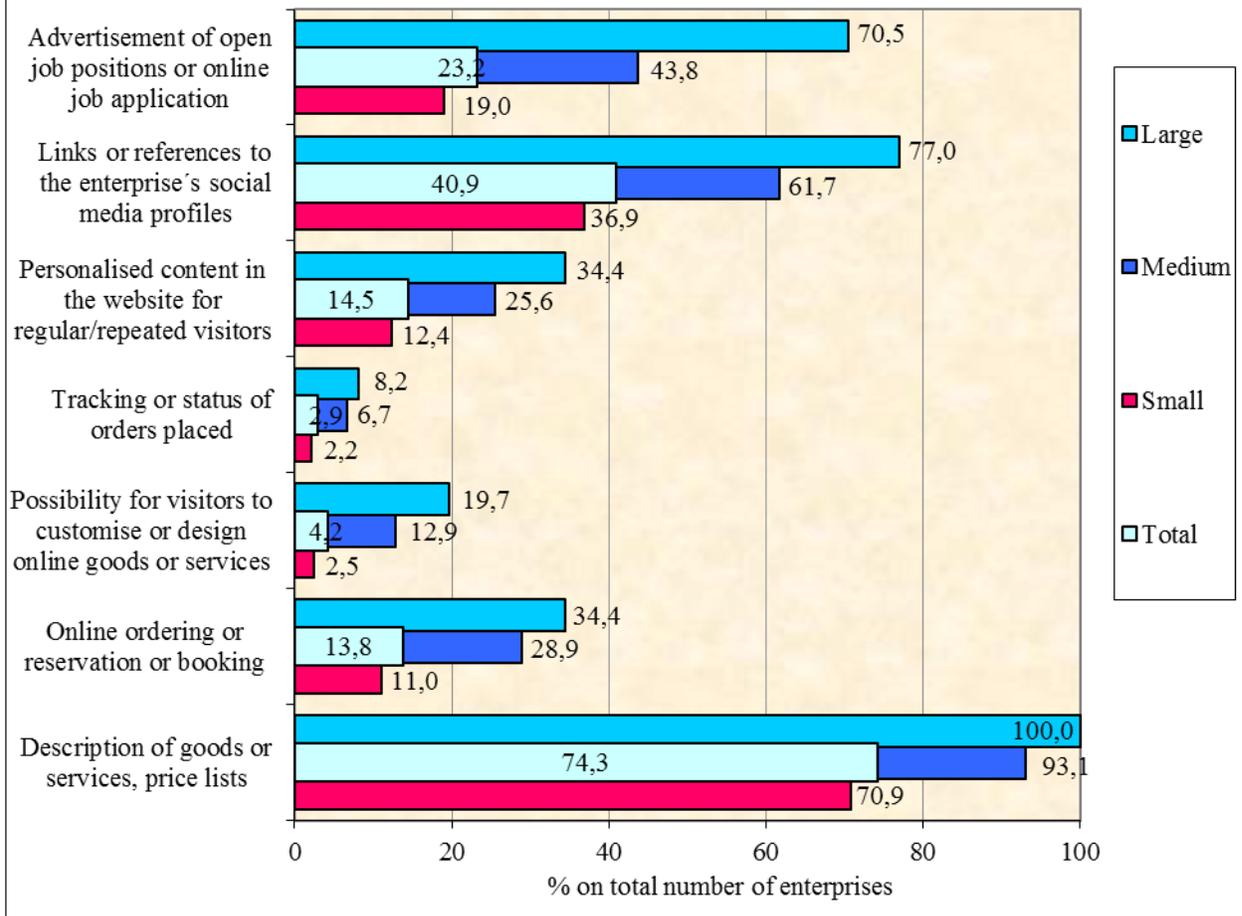
It is worth mentioning that almost 40,9% of all enterprises have links or references to the enterprise's social media profiles (i.e. Facebook, Twitter, LinkedIn, YouTube, etc.). In large enterprises that percentage reaches 77,0%.

23,2% of all enterprises advertise open job positions or offer online job application. In large enterprises that percentage reaches 70,5%.

13,8% of all enterprises, provide the possibility of online ordering or reservation to their customers and 14,5% offer the possibility of personalized content for repeated visitors.

Tracking or status of orders and online customization or design of goods and services are provided by 2,9% and 4,2% of enterprises respectively (Figure 9).

Figure 9: Website Facilities



OTHER USE OF THE INTERNET

85,1% of all enterprises stated that their employees have remote access to the enterprises' e-mail system, documents and / or applications. 25,0% of all enterprises declared that they pay to advertise on the internet. Specific targeted advertising methods based on:

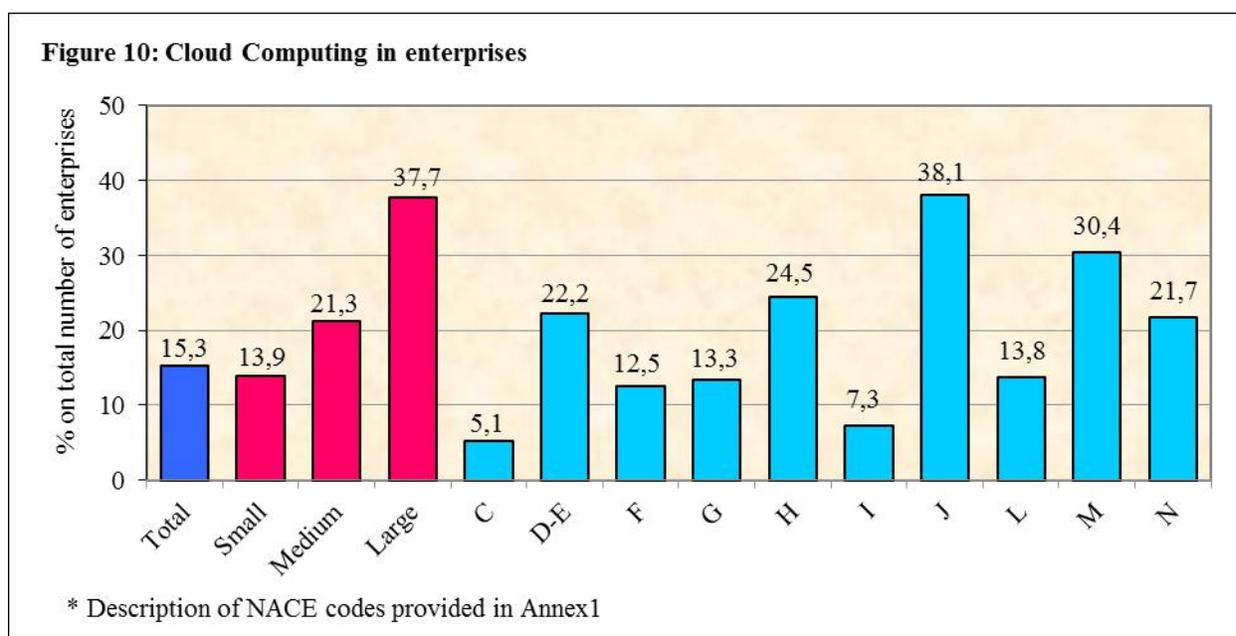
- Webpages content or keywords searched by users was used by the 17,5%,
- Tracking of internet users past activities or profile was used by the 12,1%,
- Geolocation of internet users was used by the 13,3%, and
- Any other method of targeted advertising was used by the 1,2%.

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 services should have all of the following characteristics:

- are 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.

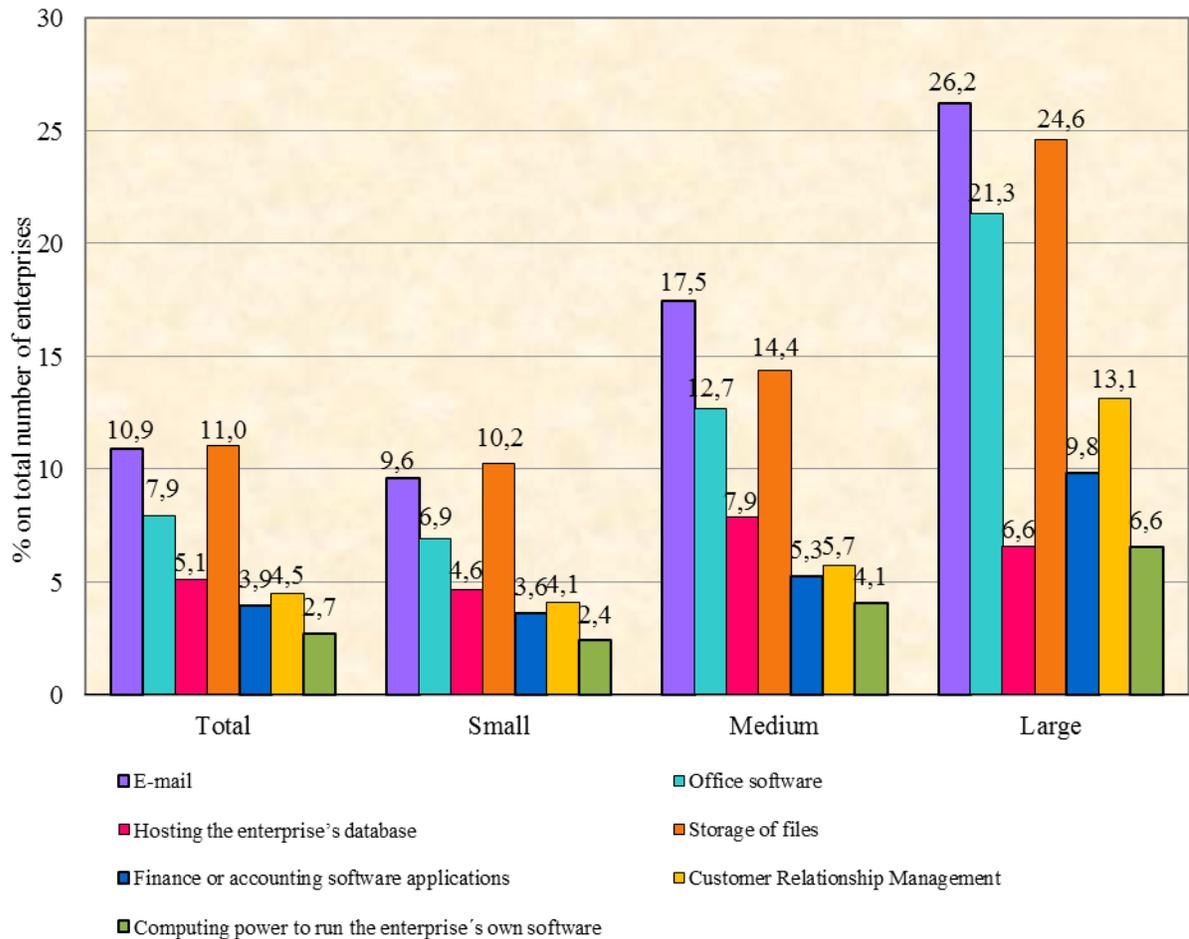
In Cyprus, cloud computing is not very common among enterprises. Only 15,3% of all enterprises buy any cloud computing service. The percentage reaches 37,7% in large and enterprises and 38,1% in enterprises of NACE rev.2 Group J: Information and Communication (Figure 10).



The main use of cloud computing services in enterprises is the storage of files (e.g. Dropbox, Amazon S3, EMC Mozy, Acronis Online, Diino, etc.) with 11,0%. E-mail (e.g. Email Enterprise, Microsoft Exchange Online / Office 365, etc.) as a cloud computing service comes second with 10,9%. The office software (e.g. word processors, spreadsheets (e.g. Microsoft Office Cloud), etc.) is in third place with 7,9% of all enterprises (Figure 11).

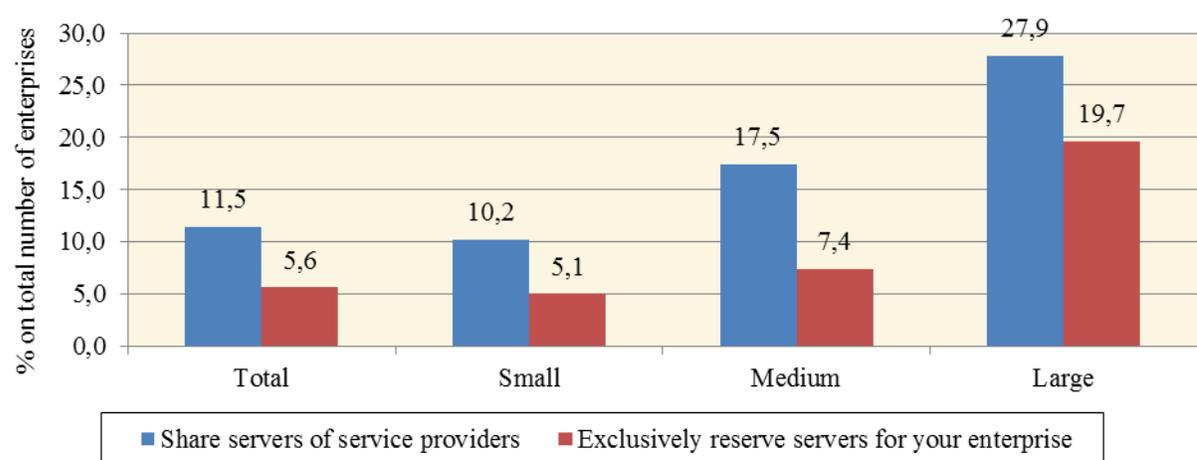
In large and medium enterprises the most popular is the e-mail as a cloud computing service while in the small enterprises the storage of files is the most popular, the e-mail is second, and in third place the office software (Figure 11).

Figure 11: Cloud Computing services



11,5% of all enterprises bought cloud computing services delivered from shared servers compared to 5,6% who bought cloud computing services from exclusively reserved servers. In large enterprises that percentage reaches 27,9% and 19,7% respectively (Figure 12).

Figure 12: Providers of Cloud Computing services



BIG DATA ANALYSIS

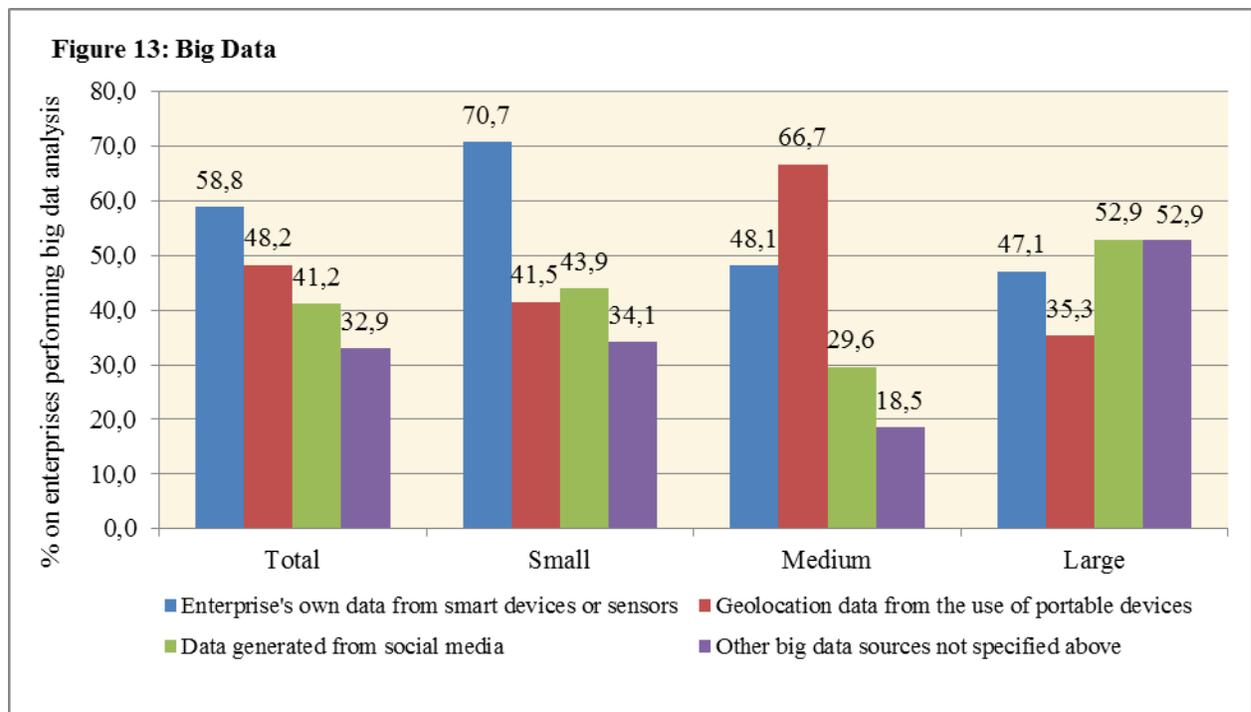
The term “Big data” refers to data that are generated from activities that are carried out electronically and from machine to machine communications (e.g. data produced from social media activities, from production processes, etc.)

Big data typically have characteristics such as:

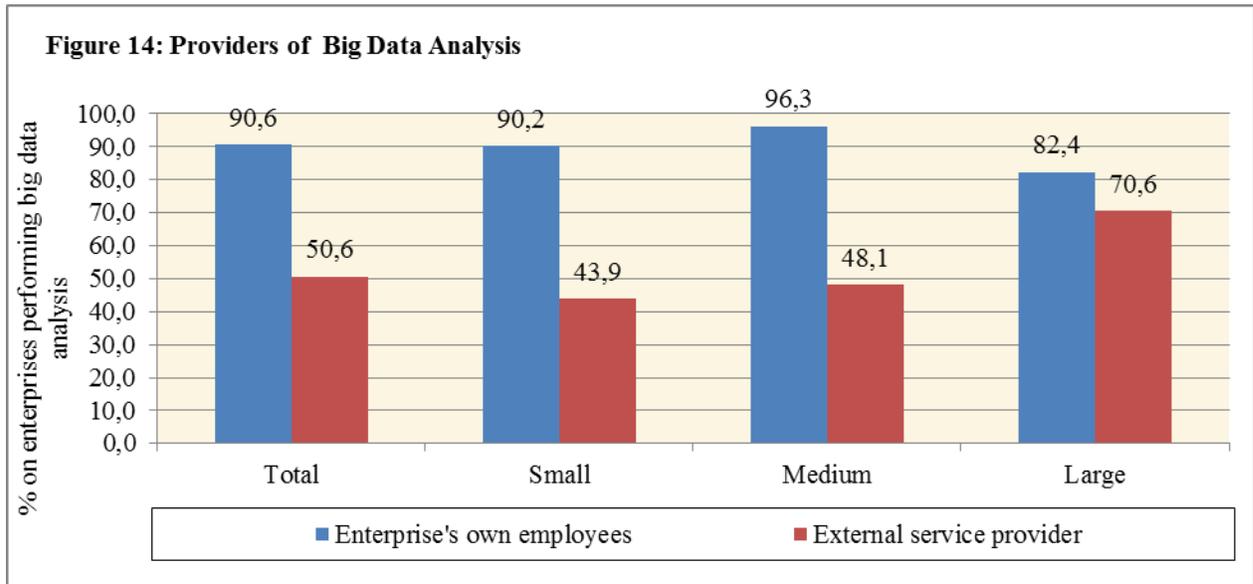
- Significant volume, referring to vast amounts of data generated over time.
- Variety, referring to the different format of complex data, either structured or unstructured (e.g. text, video, images, voice, docs, sensor data, activity logs, click streams, coordinates, etc.).
- Velocity, referring to the high speed at which data is generated, becomes available and changes over time.

Big data analysis refers to the use of techniques, technologies and software tools for analyzing big data extracted from the enterprise's data sources or other data sources.

Only 2,6% of all enterprises performed big data analysis from any data source. 58,8% of those enterprises performed big data analysis from enterprise’s own data from smart devices or sensors, 48,2% from geolocation data from the use of portable devices, 41,2% from data generated from social media and 32,9% from other sources. In large enterprises that percentages reached 47,1%, 35,3%, 52,9% and 52,9% respectively (Figure 13).



90,6% of enterprises that performed big data analysis used the enterprise's own employees to perform the analysis, compared to 50,6% which used external service providers. In large enterprises that percentage reaches 82,4% and 70,6% respectively (Figure 14).

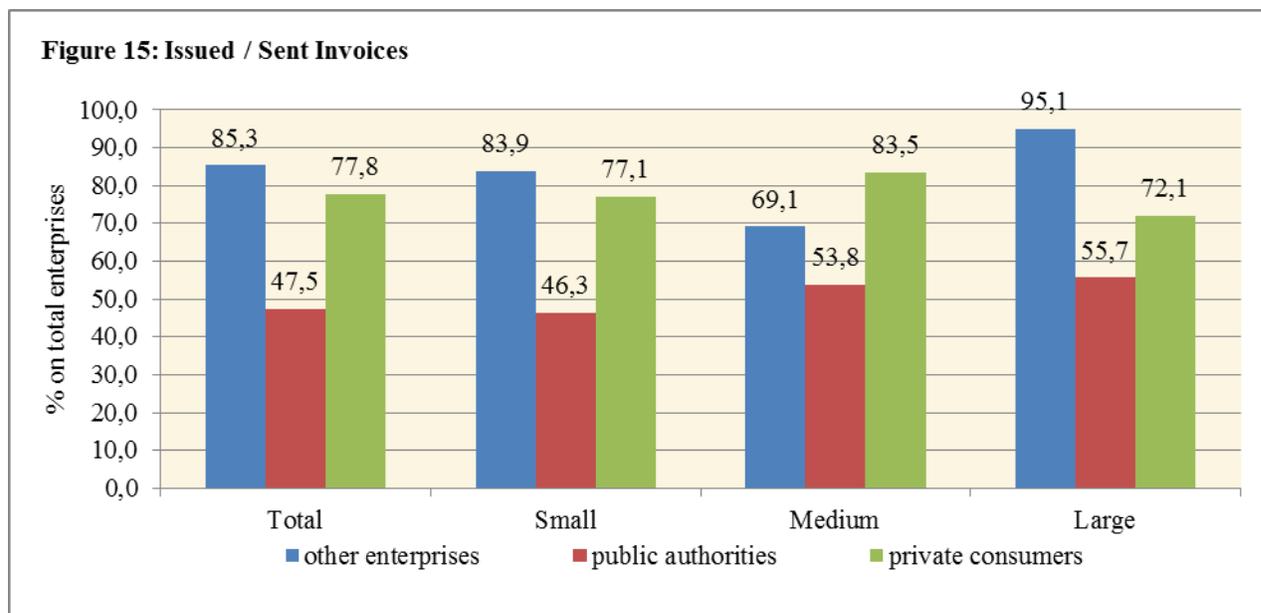


INVOICING

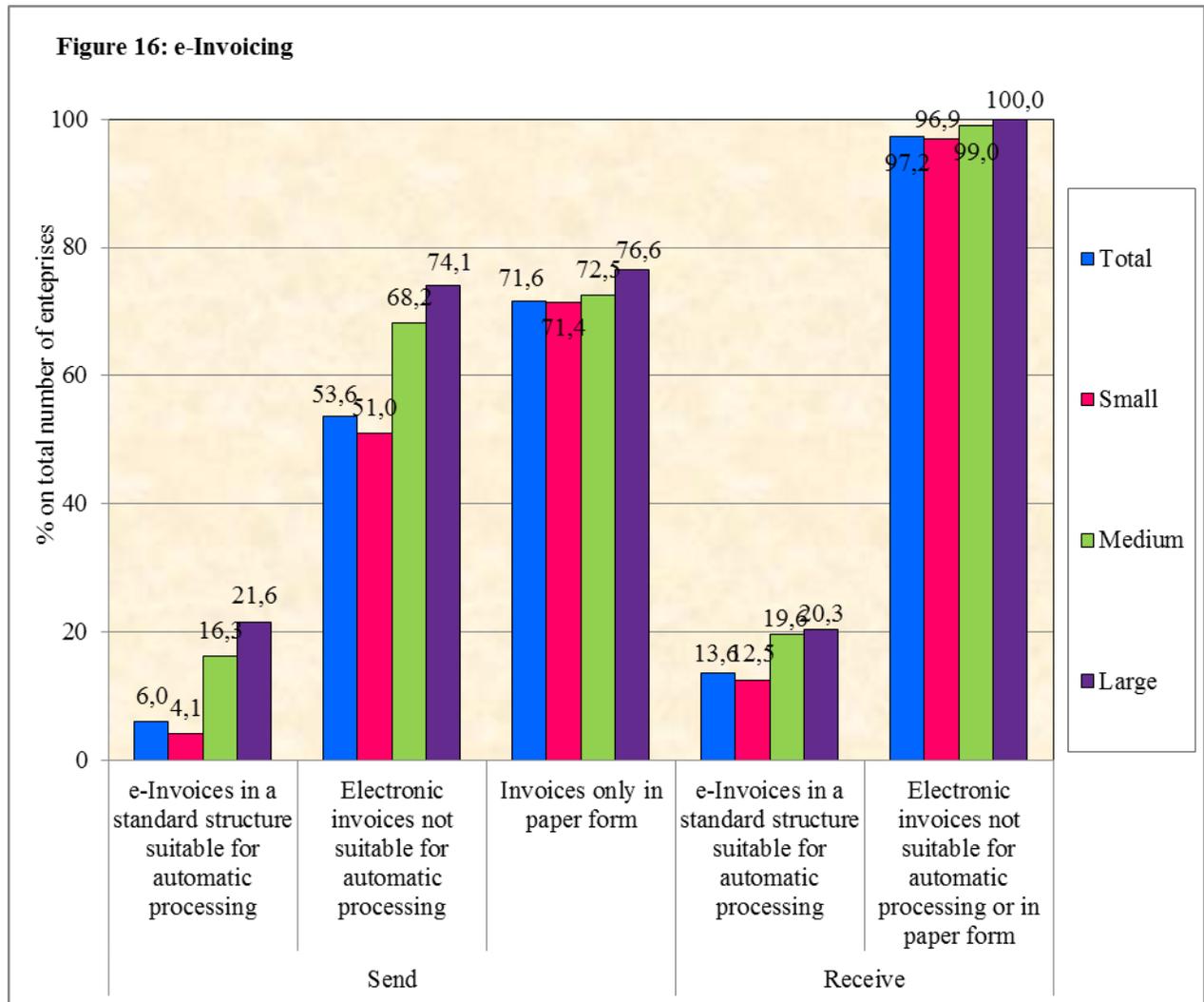
An electronic invoice is an electronic transaction document that contains billing information. There are two different types of electronic invoices:

- (a) e-invoices are electronic invoices in a standard structure (suitable for automatic processing) that may be processed automatically. They may be directly exchanged between suppliers and customers, via service operators or via an electronic banking system.
- (b) Invoices in electronic format **not** suitable for automatic processing.

During 2015, 85,3% of all enterprises have issued / sent invoices (electronic or paper invoices) to other enterprises, 77,8% to private consumers and 47,5% to public authorities (Figure 15).



E-invoices in a standard structure suitable for automatic processing (6,0%) is not as commonly used as invoices in electronic format not suitable for automatic processing (via e-mail as an attachment) (53,6%). But, the invoice in paper form is the most popular with percentage 71,6%. However, 21,6% of large enterprises send e-invoice in a standard structure suitable for automatic processing and 20,3% received an e-invoice in a standard structure suitable for automatic processing (Figure 16).

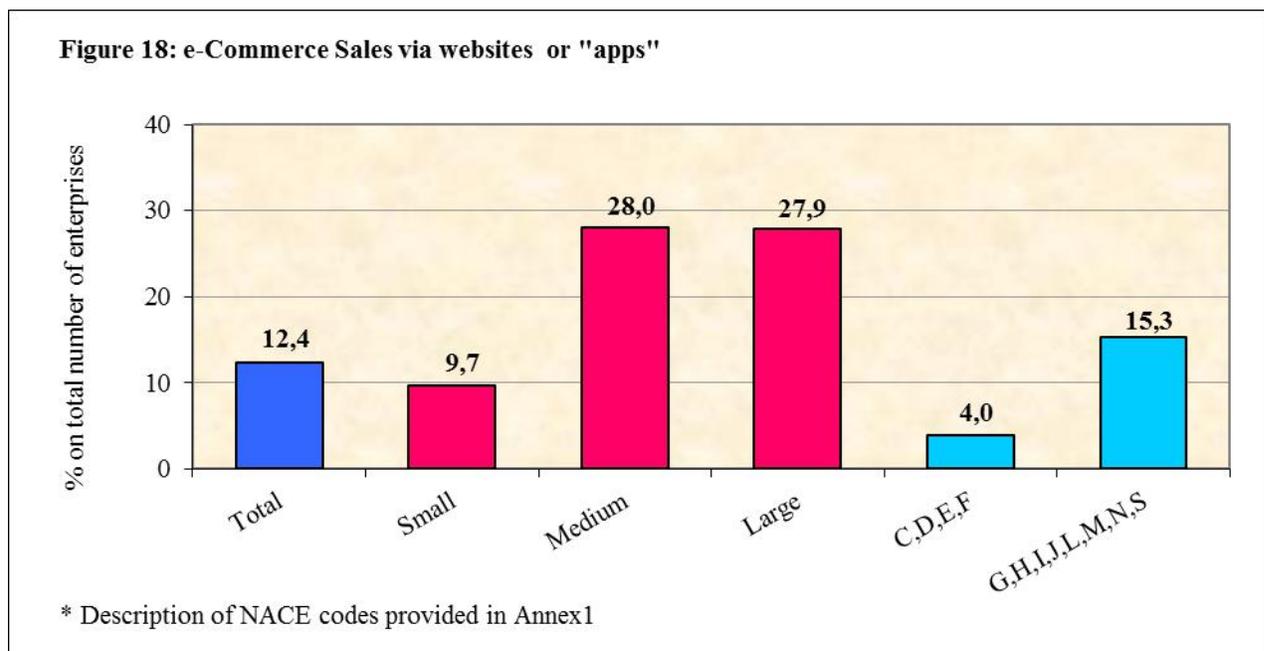


E-COMMERCE

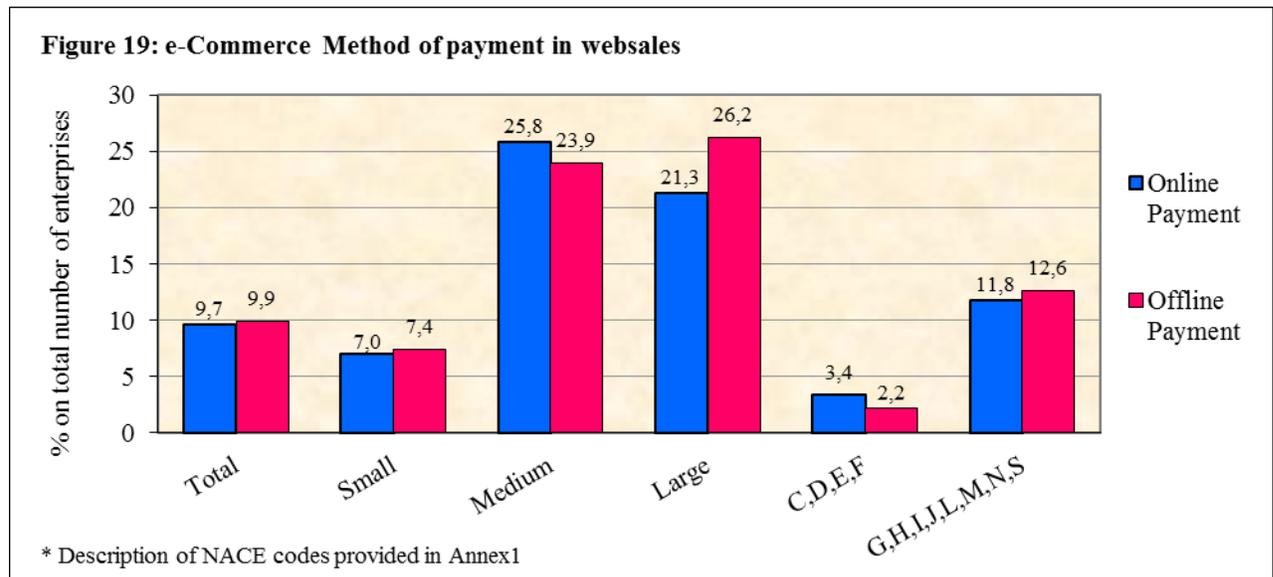
E-Commerce is not very popular among enterprises in Cyprus. Only 12,4% of enterprises had received orders via website or “apps” (excluding manually typed e-mails) and 2,6% via EDI typed messages, during 2015 while 42,7% have sent orders via website or “apps” and 2,5% via EDI typed messages. E-Commerce via a website is more common compared to e-commerce via EDI-typed messages (Figure 17).



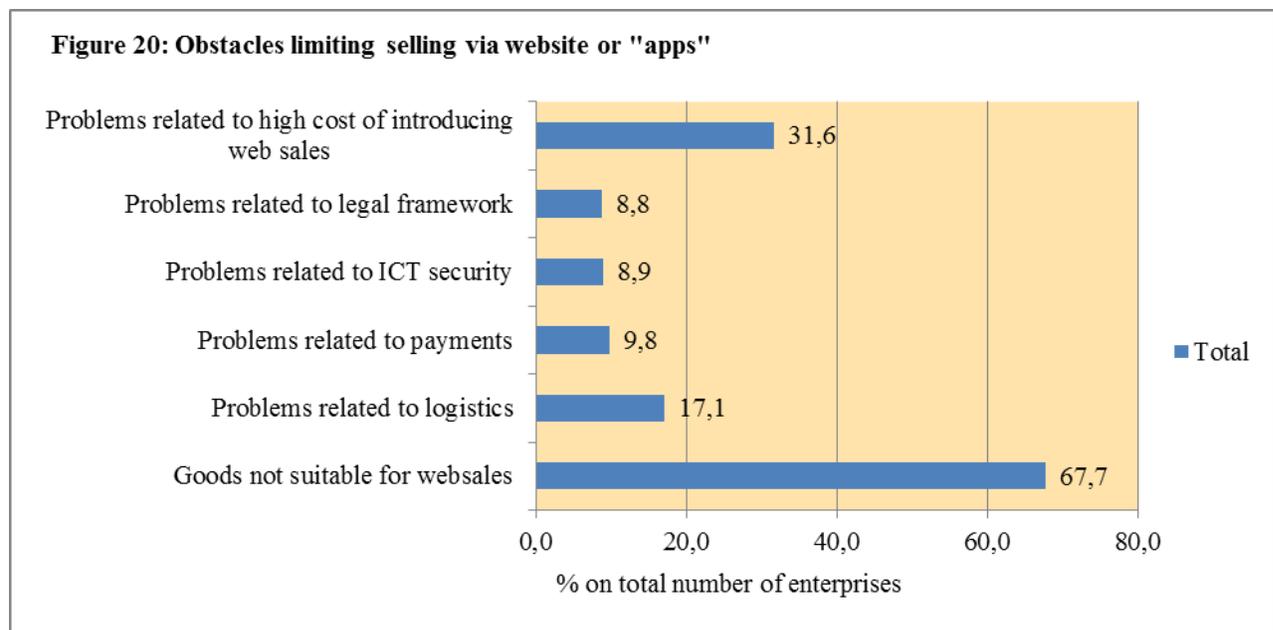
Enterprises receiving online orders in Cyprus seemed to be mostly the ones that belong in the services sector (NACE Rev.2 group G, H, I, J, L, M, N, S - See Annex I) with 15,3% which is much higher those in the manufacturing sector (C, D, E, F: 4,0%). 12,4% of all enterprises received orders via websites or “apps”. It is worth mentioning that the same percentage of medium and large size enterprises received orders via websites or “apps” (28,0% and 27,9%). Only 9,7% of small enterprises received orders via websites or “apps” (Figure 18).



9,7% of all enterprises accept online payment in web sales and 9,9% accept offline payment as a method of payment in web sales (Figure 19). Online payment refers to the payment integrated in the ordering transaction (e.g. credit, debit card, direct debit authorization, via third party accounts (e.g. JCC)) and by offline payment the payment process that is not included in the ordering transaction (e.g. cash on delivery, bank transfer, cheque payment, other not online payment).

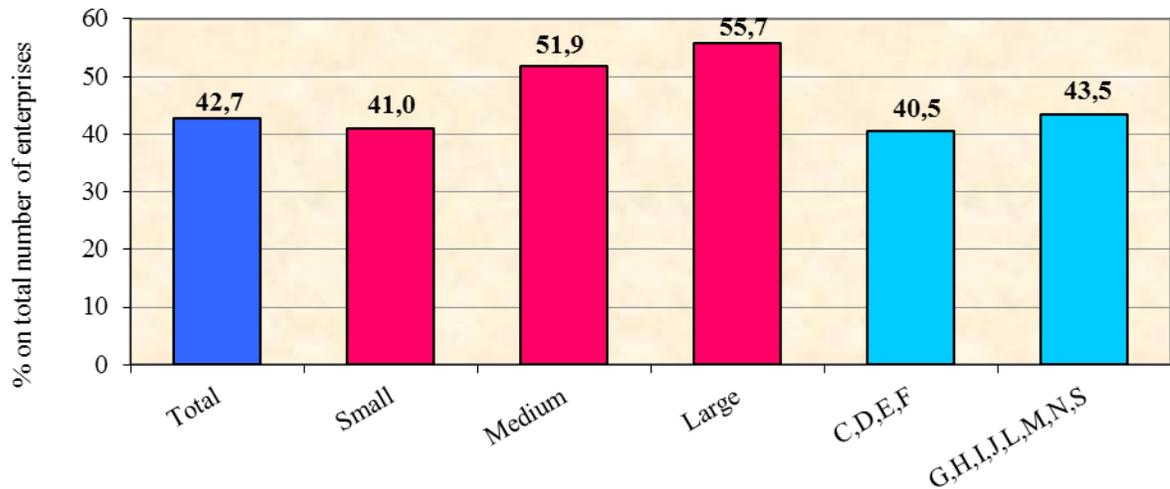


Goods not suitable for web sales was the most common reason preventing enterprises from selling via websites or “apps” (67,7%). Problems related to the high cost of introducing web sales compared with the benefits, was second with 31,6% of all enterprises (Figure 20).



During 2015, 42,7% of enterprises with 10 or more employees placed orders for products or services via websites or “apps” (excluding e-mails) compared with 23,0% in 2014. In large enterprises the percentage of placing orders via websites or “apps” was 55,7% (Figure 21). Orders via EDI type messages were only placed by the 2,5% of all enterprises (1,0% by large enterprises, 0,5% by medium and 0,2% by small).

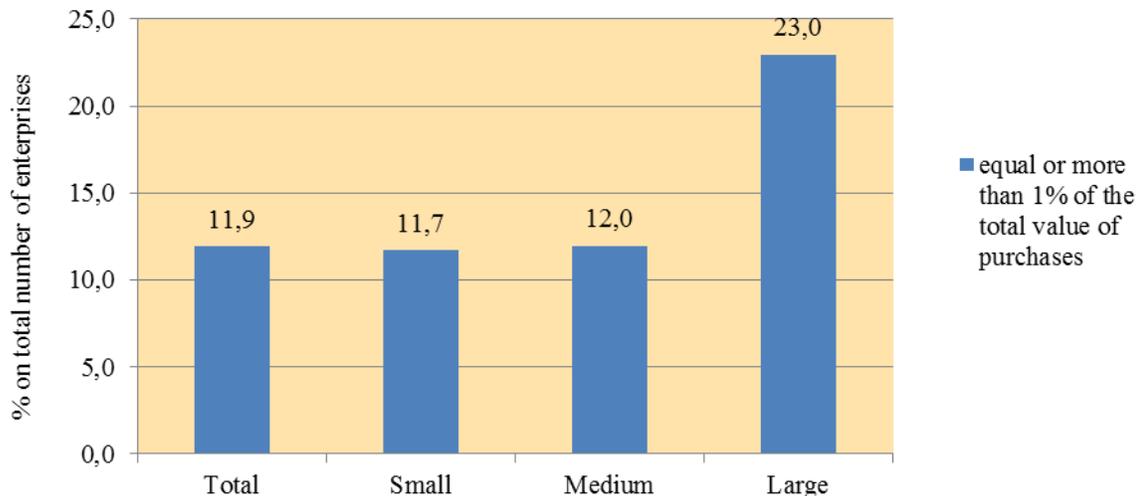
Figure 21: e-Commerce Purchases via websites or "apps"



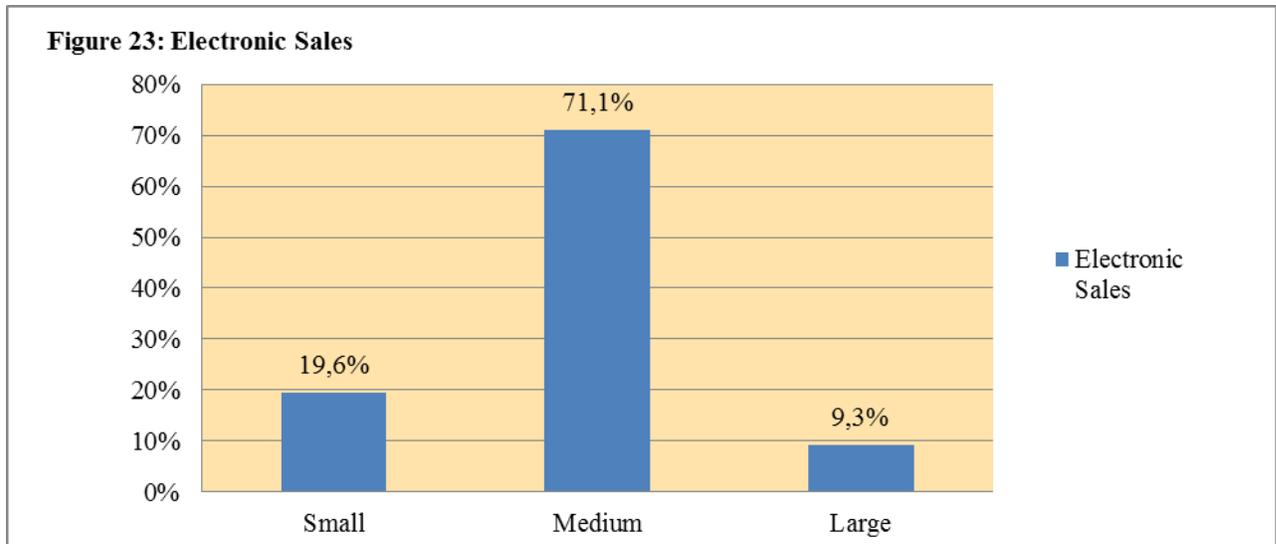
* Description of NACE codes provided in Annex I

During 2015, 11,9% of all enterprises stated that their orders via websites, “apps” or EDI type messages exceeded 1% of the total value of their purchases. For large enterprises that percentage was 23,0%, for medium was 12,0% and for small 11,7% (Figure 22).

Figure 22: More than 1% of the total value of purchases



Sales via websites, “apps” or EDI type messages amounted to 4,4% of the total turnover. In terms of value 71,1% of sales via websites, “apps” or EDI type messages was performed by medium size enterprises, 19,6% by small and 9,3% by large (Figure 23).



Annex
Description of NACE Codes included in the Survey
NACE Rev.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

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
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
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 HOUSEHOLD GOODS