



USAGE OF INFORMATION AND COMMUNICATION TECHNOLOGIES IN THE REPUBLIC OF SERBIA, 2020

Households/Individuals
Enterprises

Belgrade, 2020



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ISSN 1820-9084



Usage of information and communication technologies in the Republic of Serbia, 2020

Published by: Statistical Office of the Republic of Serbia, Belgrade, Milana Rakića 5

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Introduction

Modern society has become “information society” with the development and usage of information and communication technologies, which, as its main characteristic, plays the most important part in production, the economy and other spheres in the life of individuals and society as a whole.

Aware of the significance of those technologies, the Statistical Office of the Republic of Serbia carried out in 2004 a pilot survey on the usage of information and communication technologies in organizations dealing with financial and insurance activities. This undertaking was primarily meant to test and prepare the methodologies and instruments for the implementation of similar regular surveys related to households and the economy.

In the previous fourteen years, the Statistical Office of the Republic of Serbia conducted two surveys on the usage of information and communication technologies. The first referred to households and individuals, and the second included also enterprises.

Both surveys were carried out on the territory of the Republic of Serbia were also conducted in 2020 based on EUROSTAT methodology. Data for the Republic of Serbia exclude those for AP Kosovo and Metohija.

As for households and individuals, the three months preceding the telephone interview were taken to be the reference period. The reference period for most of the questions asked to enterprises was January 2020, while selected ones referred to the whole 2019.

The survey for households was carried out on a two-stage sample, which was stratified according to the criterion of urban characteristics. The sample was allocated to the territories of Central Serbia (excluding Belgrade), AP Vojvodina and Belgrade, proportionally to the number of households. The sample included 2 800 households and 2 800 individuals. The interview was done both by telephone and indirectly (answers given by another person other than the absent one).

The survey for enterprises was carried out on a sample stratified by size classes and activities, through telephone interview. The sample covered 1 571 enterprises.

The Statistical Office of the Republic of Serbia is hopeful that this publication will provide the users enough information on the current situation in information and communication technologies, which will serve as the basis for further development.

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HOUSEHOLDS/INDIVIDUALS



1.1. Methodology

Survey period	<ul style="list-style-type: none">• The survey was carried out from 15 February to 29 February 2020.
Type of Survey	<ul style="list-style-type: none">• Telephone interview 
Sample size	<ul style="list-style-type: none">• 2 800 households• 2 800 individuals
Target population	<ul style="list-style-type: none">• For households: the target population is made of all households with at least one member aged between 16 and 74• For individuals: the target population is made of all individuals aged between 16 and 74
Type of sample	<ul style="list-style-type: none">• Two-stage, stratified sample
Geographical scope	<ul style="list-style-type: none">• Territory of the Republic of Serbia (without AP Kosovo and Metohija)

1.2. Sample

The survey on ICT usage in households was carried out on a representative survey of 2800 households in the territory of the Republic of Serbia. The response rate was 91.9% (2574 households).

Households

Sample (households)	Income			Region				Type of households		Total
	Up to 300 euros	300–600 euros	More than 600 euros	Beogradski	Vojvodina	Šumadije i Zapadne Srbije	Južne i Istočne Srbije	Urban other	Other	
Number	755	731	573	611	735	701	527	1613	961	2574
%	36.7	35.5	27.8	23.7	28.6	27.2	20.5	62.7	37.3	100.0

The same sample was also used to interview individuals aged from 16 to 74 living in the territory of the Republic of Serbia. The sample covered 2 800 individuals. The response rate was 91.7% (2574 individuals).

Individuals

Sample (individuals)	Age						Sexe		Educational level			Employment status				Total
	16–24	25–34	35–44	45–54	55–64	65–74	Men	Women	Lower than secondary	Secondary	Tertiary	Employee	Unemployed	Student	Other	
Number	151	181	319	408	571	944	969	1605	432	1300	842	818	430	52	1274	2574
%	5.9	7.0	12.4	15.8	22.2	36.7	37.6	62.4	16.8	50.5	32.7	31.8	16.7	2.0	49.5	100.0

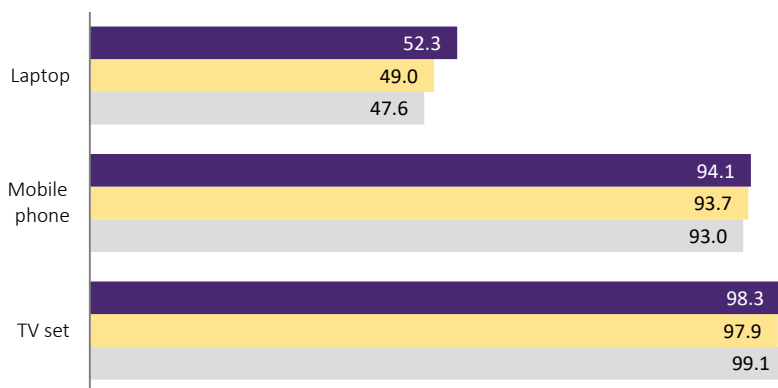
1.3. Main findings

1.3.1. Devices available in households

Households were offered to give more than answers to the question relative to devices available in households. The survey shows that 98.3% of households have a TV set, and 94.1% a mobile phone.

There are 52.3% of households that have a laptop, which is an increase of 3.3% and 4.7% in relation to 2019 and 2018, respectively.

Chart 1.1. Devices available in households (%)



94.1% of households have a mobile phone



2020



2019

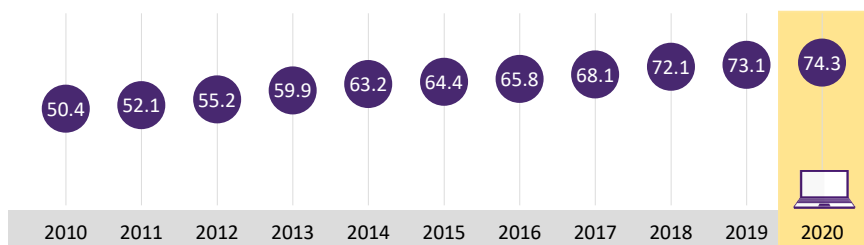


2018

1.3.2. Computers in households

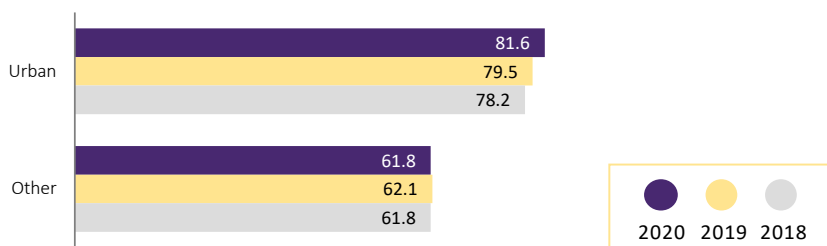
The main findings of the survey show that 74.3% of households in the Republic of Serbia have a computer, which is an increase of 1.2% and 2.2% in relation to 2019 and 2018, respectively. The percentage of computers in households varies depending on the territory: in Belgrade it amounts to 91.5%, in Vojvodina to 66.8%, in Šumadija i Zapadna Srbija to 68.6% and in Južna i Istočna Srbija to 71.2%.

Graph 1.2. Computers ачунари у домаћинствима (%)



The differences are visible when comparing the availability of computers in urban and other parts of Serbia: 81.6% versus 61.8%. In relation to 2019, this gap has slightly increased, which is backed up by growth rates of computer availability in urban and other parts of Serbia. The growth rate in the urban parts of Serbia is 2.1%, while decrease of 0.3% is recorded in the other parts of Serbia, relative to 2019.

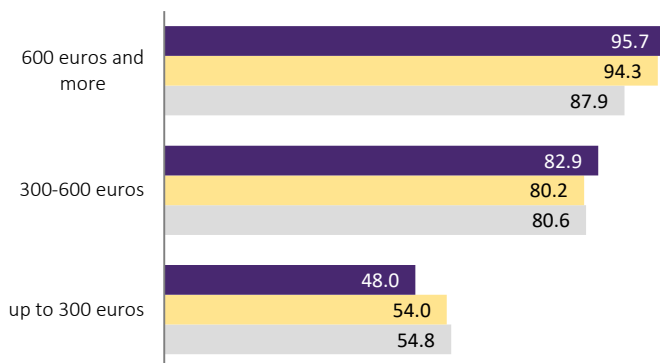
Chart 1.3. Percentage of households having a computer, by type of settlements (%)



The structure of households by monthly income is expressive of the gap as to the availability of computers in households. Computers are mostly available in households with a monthly income of more than 600 euros (95.7%), while households with an income up to 300 euros account only for 48%.

When looking at the data for 2019, this gap grew larger in terms of computers available in households by income level, which is obvious from growth rates in certain income classes for 2020, compared with the previous year. As for households with an income of more than 600 euros the increase is 1.4%, while for households with an income from 300 to 600 euros it amounts to 2.7%, compared with 2019. For households with an income of less than 300 euros the decrease is 6%.

Chart 1.4. Percentage of households having a computer, by income level (%)



48% of households with an income up to 300 euros have a computer



2020



2019

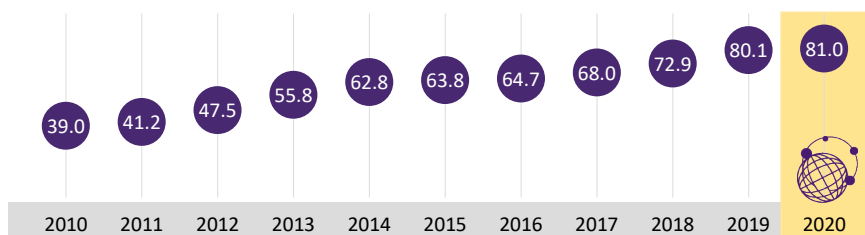


2018

1.3.3. Internet in households

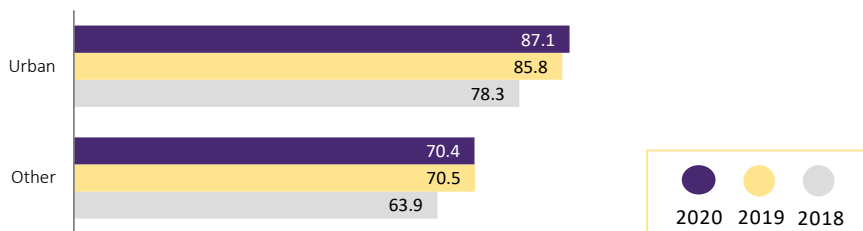
In the Republic of Serbia, 81% of households have an Internet connection, which is an increase of 0.9% and 8.1% relative to 2019 and 2018, respectively.

Chart 1.5. Does the household have access to the Internet at home? (%)



The highest percentage of Internet connection was observed in Belgrade, amounting to 94.1%. In Vojvodina it amounts to 75.3%, in Šumadija i Zapadne Srbije to 77.5% and in Južna i Istočna Srbija to 77.3%.

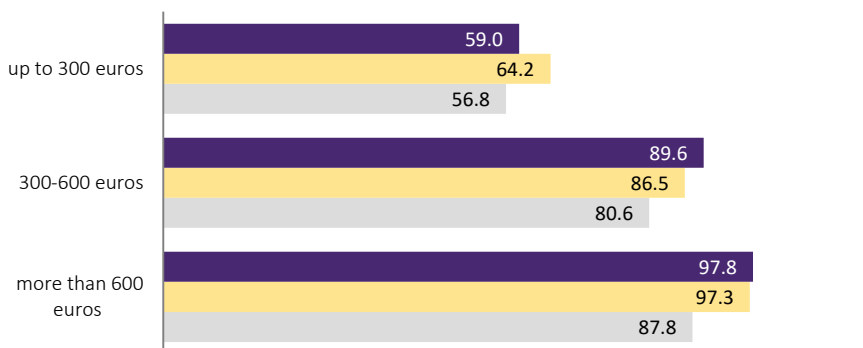
Graph 1.6. Households having an Internet connection, by type of settlements (%)



There are also considerable differences as to the percentage of Internet connection in urban and other settlements of Serbia: 87.1% versus 70.4%. When compared with 2019, in urban and other settlements of Serbia the growth rate is 1.3%, while the decrease in other parts of Serbia amounts to 0.1%.

As in computer availability in households, there is a large gap as regard having an Internet connection. When looking at the structure of households by their monthly income level, Internet connection is mostly used by households which monthly exceeds 600 euros (97.8%), while the share of households with an income up to 300 euros is only 59%.

Chart 1.7. Household having an Internet connection, by income level (%)

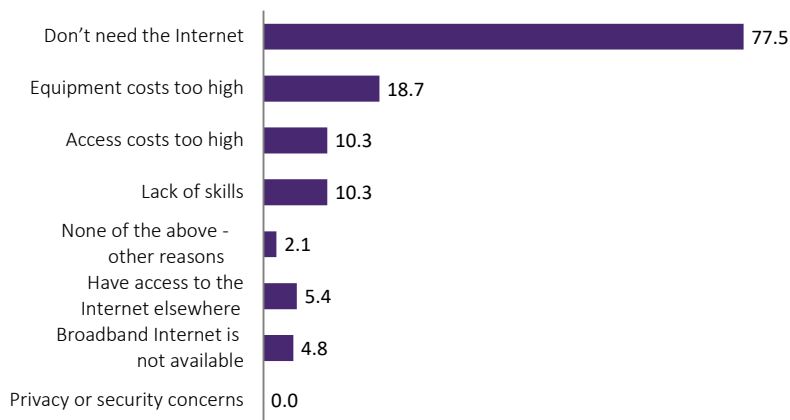


59% of households with an income up to 300 euros have an Internet connection



As regard the reasons for not having an Internet connection at home 77.5% said not needing the Internet, 18.7% indicated that equipment costs were too high, while 10.3% of households mentioned the lack of skills.

Chart 1.8. Reasons of households for not having an Internet connection at home (%)



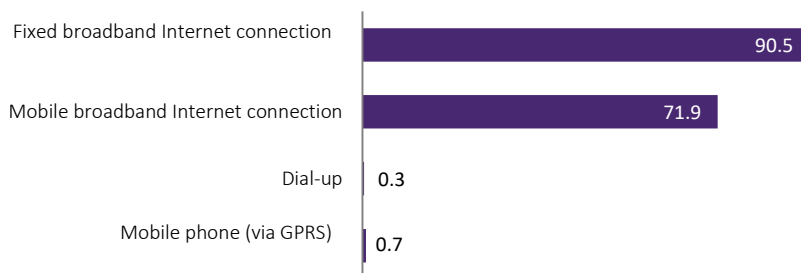
Households were offered several answers to the question relative to the type of connection used to access the Internet. The obtained results show that of the total number of households having an Internet connection, 90.5% have a fixed broadband Internet connection, 71.9% a mobile broadband Internet connection, and 0.7% of households use a mobile phone via GPRS.



90.5% of households having an Internet connection use a fixed broadband connection

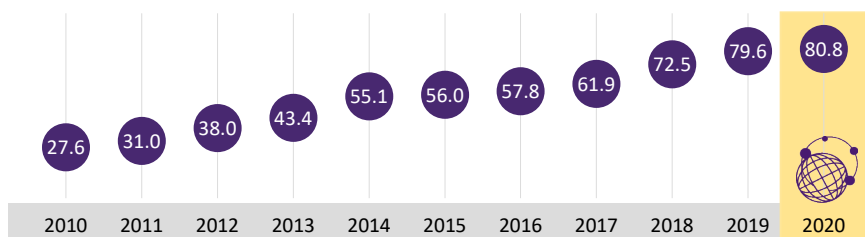
The results of the survey show that only 0.3% of households have a dial-up connection. This is primarily due to the use of a broadband connection.

Chart 1.9. Type of Internet connection (%)



The broadband Internet connection, besides providing faster access, changes the entire way of using the Internet since it allows quicker download of information from the Internet compared to the classic dial-up modem connection. Accordingly, since 2005 the percentage of households having this type of Internet connection has been taken to be one of the main indicators of ICT usage in the European Union. In Serbia, 80.8% of households have a broadband Internet connection, which is an increase of 1.2% and 8.3% relative to 2019, and 2018, respectively. The percentage of this type of Internet connection is the highest in Belgrade, 93.9%, in Vojvodina, 74.7%, in Šumadija i Zapadna Srbija, 77.5% and in Južna i Istočna Srbija, 77.3%.

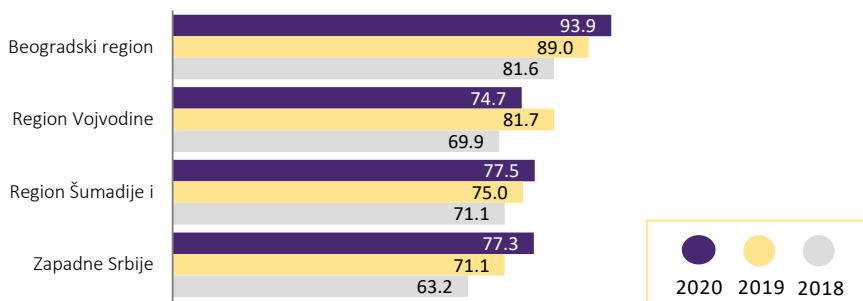
Chart 1.10. Broadband Internet connection in households (%)



Broadband Internet connection is mostly available in households having a monthly income of more than 600 euros (97.7%), while the share of those with an income of up to 300 euros is 58.8%.

Large differences are also observed when comparing the use of this type of Internet connection in urban and other settlements of Serbia: 87.0% versus 70.1%.

Chart 1.11. Broadband Internet connection in households, by territory (%)



1.3.4. Individuals: use of computers

In the Republic of Serbia, 72.4% of individuals used a computer more than in the last three months, 1.5% more than three months ago, and 6.4% more than one year ago. And 19.8% individuals never used computer. The number of computer user increased by 2%, 3.1% and 6.4% when compared with 2019, 2018 and 2017.



The number of users increased by **1.9%** in relation to 2019.

In relation to 2019, the number of individuals who used a computer in the last three months increased by more than 6 500.



More than **3 800 000** individuals used a computer in the last three months

The share of computer users (in the last three months, by educational level:

- 87.7% of persons with tertiary education;
- 74.9% of persons with secondary education;
- 48.5% of persons with lower than secondary education.

Graph 1.12. When did you last use a computer? (%)

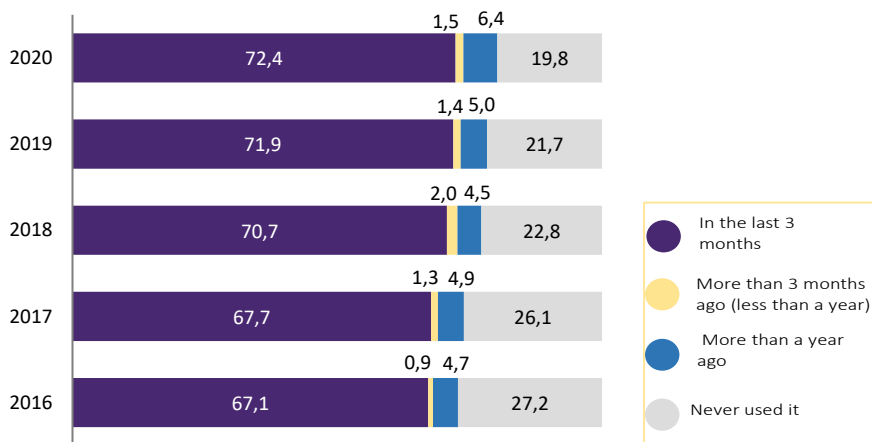
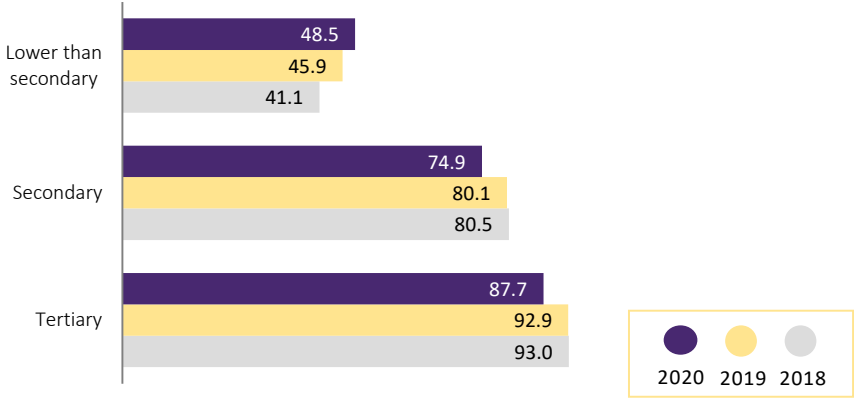
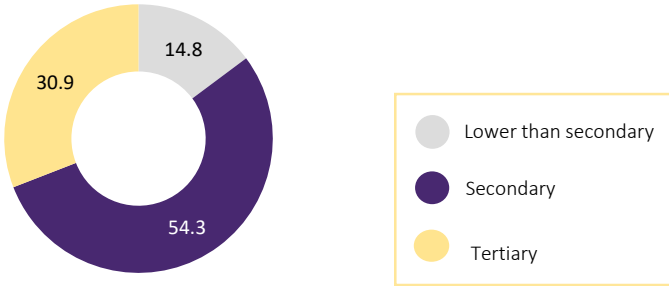


Chart 1.13. Share of computer users (in the last three months), by educational level (%)



Among computer users, 54.3% have secondary education, 14.8% of users have lower than secondary education, and 30.9% tertiary education.

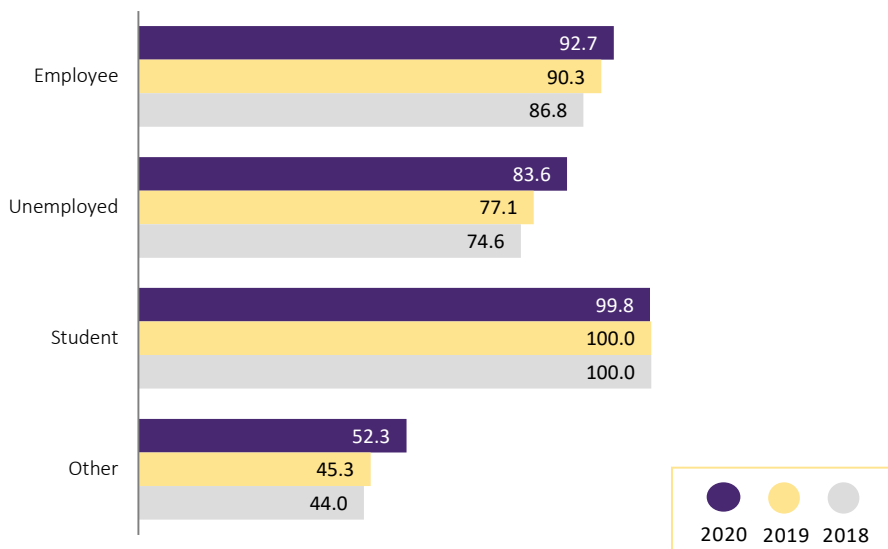
Chart 1.14. Educational structure of computer users (%)



Share of computer users (in the last three months), by employment status:

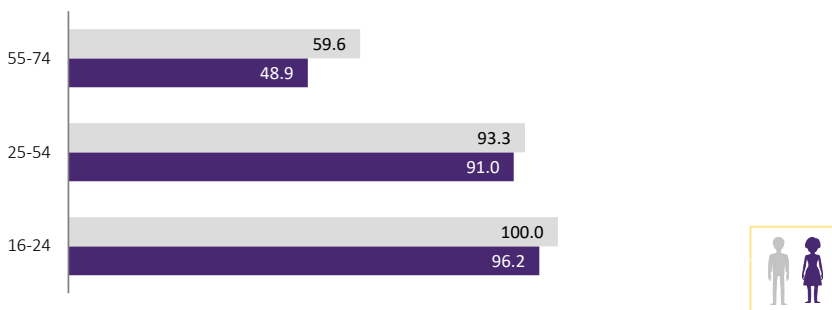
- 99.8% of students;
- 92.7% of employees;
- 83.6% of unemployed persons;
- 52.3% of other (retired persons, persons serving compulsory military service...).

Chart 1.15. Share of computer users (in the last three months), by employment status (%)



The analysis of respondents by sex show that 78.7% of men and 67.9% of women used a computer in the last three months.

Chart 1.16. Use of computers (in the last three months), by sex and age (%)



When asked how often, on average, the respondents used a computer in the last three months, 84.9% said having used a computer every day or almost every day, 7.5% at least once a week, 3.1% at least once a month, and 4.5% less than once a month.



More than **3 200 000** persons use a computer every day or almost every day

When compared with 2019, the number of persons who have used a computer every day or almost every day increased by slightly more than 55 000.

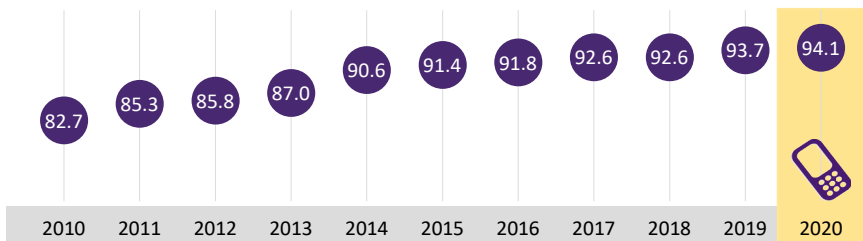
Chart 1.17. How often, on average, have you used a computer in the last three months? (%)



1.3.5. Individuals: use of mobile phones

The survey shows that 94.1% of persons use a mobile phone. This data for 2019 amounts to 93.7%.

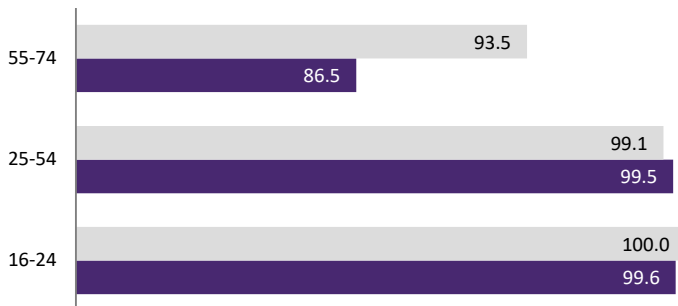
Chart 1.18. Use of mobile phones (%)





More than 4 940 000 of persons use a mobile phone

Chart 1.19. Use of mobile phones, by sex and age (%)



1.3.6. Individuals: use of the Internet

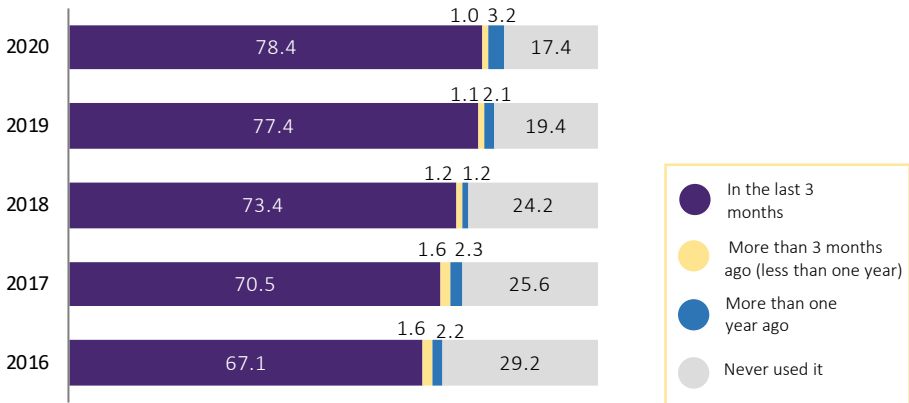
In Serbia, 78.4% of persons have used the Internet in the last three months, 1.0% of the respondents used the Internet more than three months ago, and 3.2% more than one year ago. There were 17.4% of respondents who had never used the Internet.

The number of Internet users increased by 2%, 6.8% and 8.2% compared with 2019, 2018 and 2017, respectively.



The number of Internet users increased by 2% in relation to 2019

Chart 1.20. When did you last use the Internet? (%)



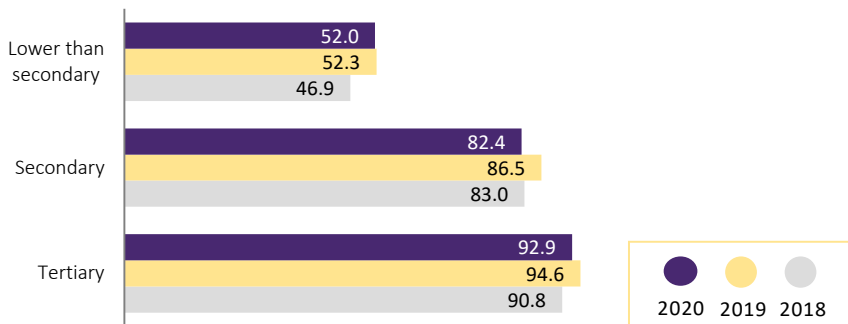
More than 4 110 000 persons have used the Internet in the last three months

When compared with 2019, the number of persons who have used the Internet in the last three months increased by slightly more than 30 000.

Share of Internet users (in the last three months), by educational level:

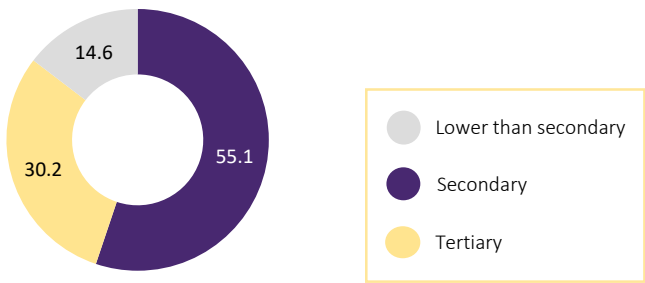
- 92.9% of persons with tertiary education;
- 82.4% of persons with secondary education;
- 52.0% of persons with lower than secondary education.

Chart 1.21. Share of Internet users (in the last three months), by educational level (%)



Among Internet users, 55.1% have secondary education, 14.6% secondary education and 30.2% tertiary education.

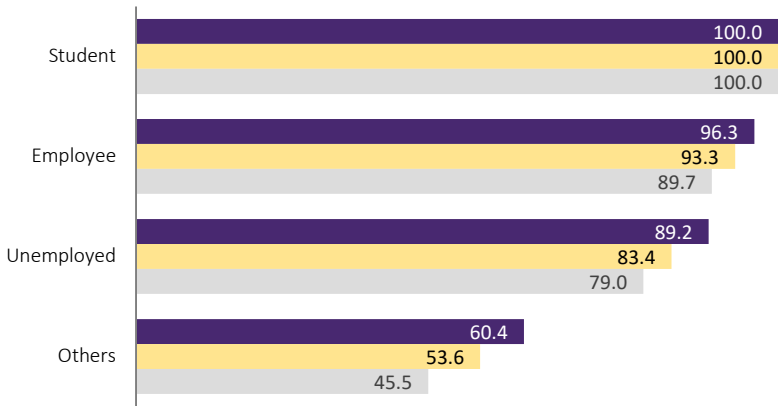
Chart 1.22. Educational structure of Internet users (%)



Share of Internet users (in the last three months), by employment status:

- 100.0% of students;
- 96.3% of employees;
- 89.2% of unemployed persons;
- 60.4% of others (retired persons, persons serving compulsory military service...).

Chart 1.23. Share of Internet users (in the last three months), by employment status (%)





More than **3 750 000** persons use the Internet every day or almost every day



2020



2019



2018

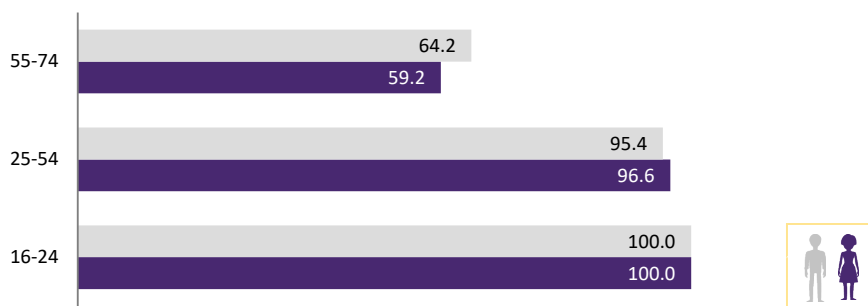
When asked how often, on average, they have used the Internet in the last three months, 91.2% of respondents said: every day or almost every day.

When compared with 2019, the number of persons who used the Internet every day or almost every day decreased by slightly more than 57 000.

Chart 1.24. How often, on average, have you used the Internet in the last three months? (%)



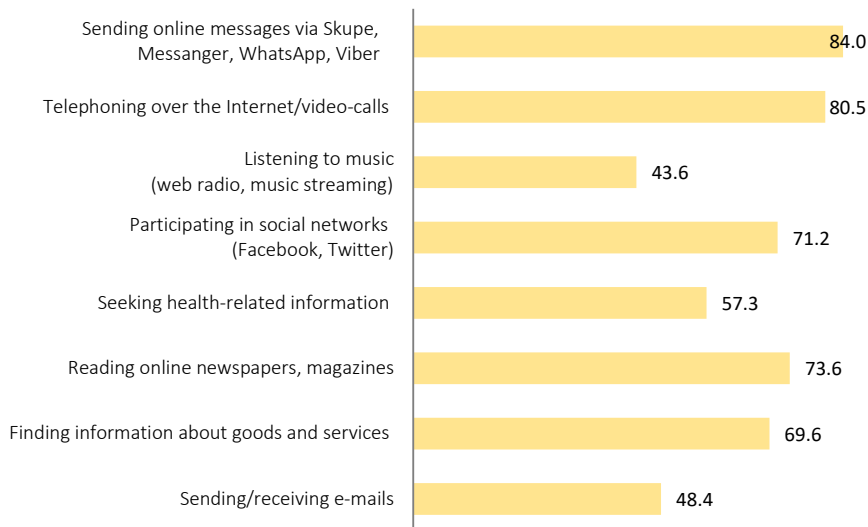
Chart 1.25. Use of the Internet (in the last three months), by sex and age (%)



The analysis of respondents by sex indicates that in the last three months 81.8% of men and 76.0% of women have used the Internet.

In the last three months the respondents have used the Internet mostly for sending online messages via WhatsApp, Viber, Skype, Messenger (84.0%), as well as for telephoning over the Internet/video-calls (80.5%).

Chart 1.26. Types of Internet use (for private purposes) in the last three months (%)



71.2% of Internet population have an account on social networks (Facebook, Twitter)

1.3.7. E-government

The survey indicates that 37.0% of Internet population use Internet services instead of personal contacts or visiting public institution or public authorities.



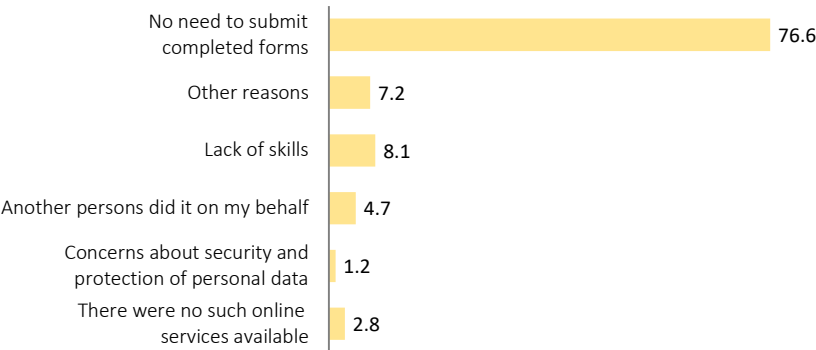
More than 1 415 000 persons use websites/apps of public authorities to obtain information

Chart 1.27. For which of the following public authorities' services did you use the Internet? (%)



The survey indicates also that 34% of Internet population used the Internet to obtain information from public authorities' websites, and 25.2% to download official forms.

Chart 1.28. Reason for not having submitted completed forms to public authorities over the Internet (%)



1.3.8. E-commerce

As regard the period when Internet users have bought/ordered goods aor services over the Internet, 36.1% of users have bought/ordered goods/services in the last three months, 11.8% did it more than three months ago, and 9.1% more than a year ago.

Forty-three percents of Internet users have never bought/ordered goods or services over the Internet.

Chart 1.29. When did you last (for private purposes) buy/order goods or services over the Internet? (%)

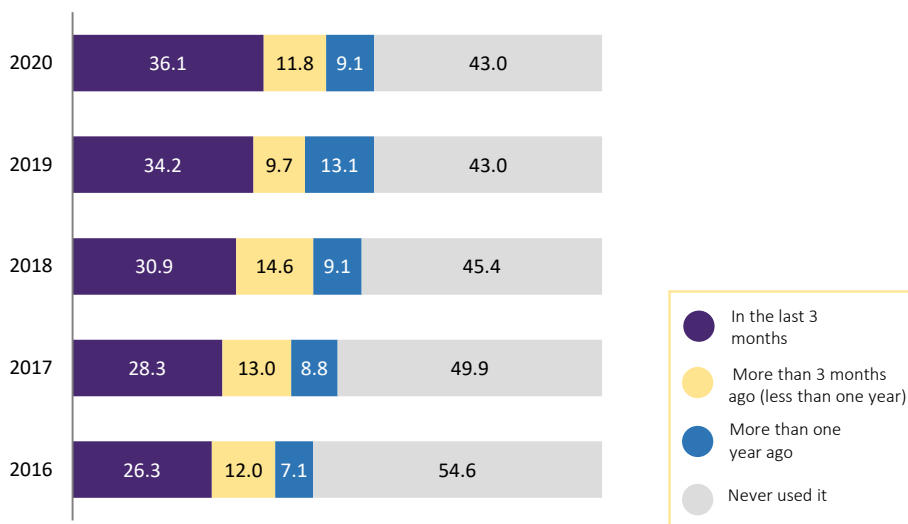
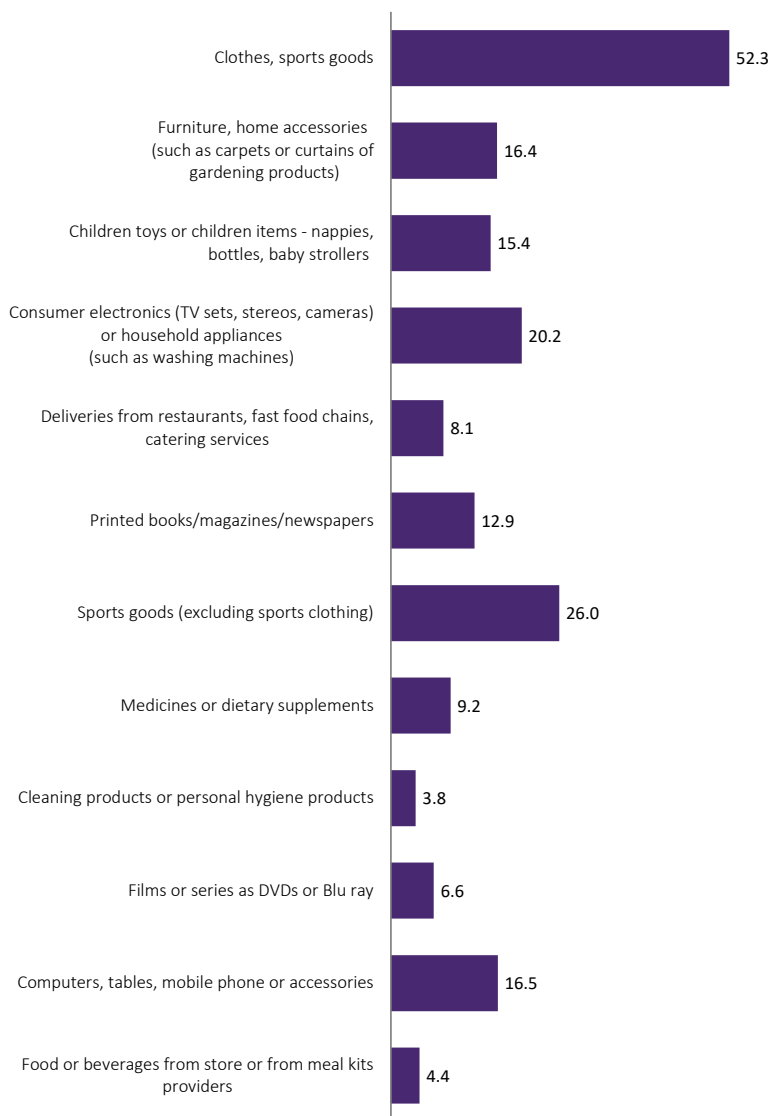


Chart 1.30. Which of the following goods or services have you ordered (for private purposes) over the Internet in the last 12 months? (%)

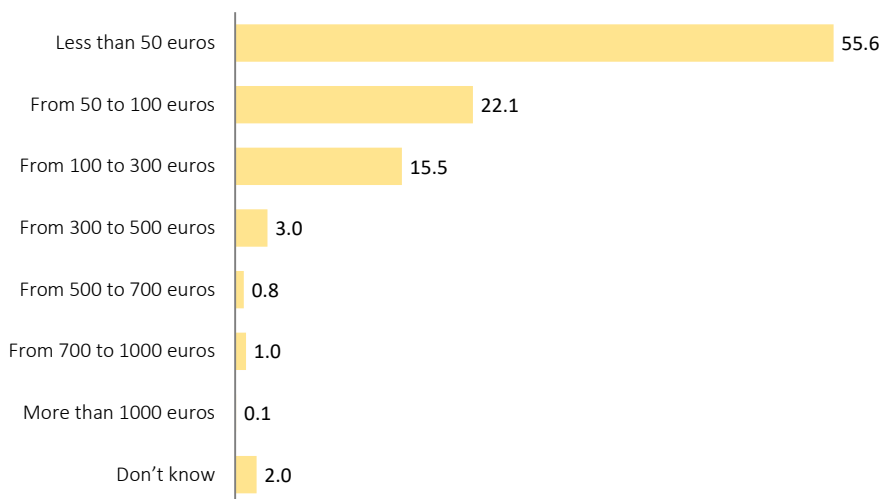


The largest number of users buy/order clothes and sports goods over the Internet (52.3%) and sports goods (26.0%).

Chart 1.31. How often have you bought/ordered goods or services over the Internet for private purposes in the last three months? (%)



Chart 1.32. How much have you spent when buying/ordering goods or services over the Internet for private purposes in the last three months? (%)



1.3.9. Trust, security and privacy

The survey indicates that 86.6% of Internet population has used a smart hone for private purposes in the last three months.

Chart 1.33. Have you used a smart phone for private purposes in the last three months? (%)

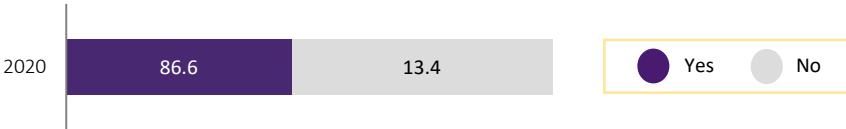
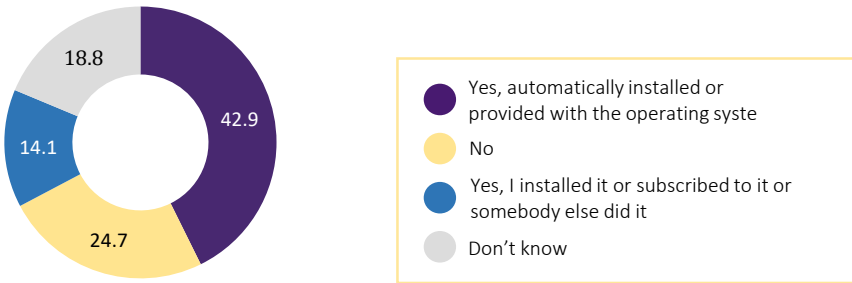


Chart 1.34. Does your smart phone have any kind of security software or services, such as antivirus, antispam or firewall? (%)



1.4. Survey results

MODULE 1.A: Access to information and communication technologies

%

Response (households)	Income			Region				Type of households		Total
	Up to 300 euros	300–600 euros	More than 600 euros	Beogradski	Vojvodina	Šumadija i Zapadna Srbija	Južna i Istočna Srbija	Urban	Other	

A1_N: Devices available in households (tick all that apply)

Desktop computer	48.0	82.9	95.7	91.5	66.8	68.6	71.2	81.6	61.8	74.3
Laptop	31.0	56.0	75.2	70.4	44.0	46.6	49.1	60.2	38.8	52.3
TV	98.4	98.6	98.0	96.8	98.3	99.3	99.0	98.1	98.7	98.3
Mobile phone	86.9	98.5	99.3	98.4	89.9	94.3	94.5	96.3	90.3	94.1

A1: Do you or anyone in your household have access to the Internet at home?

Yes	59.0	89.6	97.8	94.1	75.3	77.5	77.3	87.1	70.4	81.0
No	40.4	10.4	1.9	5.3	24.5	22.5	22.7	12.7	29.2	18.8

A2: Type of Internet connection (tick all that apply)¹⁾

Fixed broadband Internet connection	86.6	90.3	93.8	92.8	92.4	85.0	91.7	91.3	88.9	90.5
Mobile broadband Internet connection	67.4	67.1	76.9	73.2	63.5	77.7	74.1	71.4	73.0	71.9
Dial-up access over telephone line (ISDN)	0.4	0.0	0.3	0.3	0.7	0.0	0.0	0.3	0.1	0.3
Mobile phone (via GPRS)	1.5	0.9	0.2	1.1	1.2	0.0	0.5	0.6	1.0	0.7

¹⁾ Data refer to households that said "Yes" in question A1.

MODULE 1.A: Access to information and communication technologies

%

Response (household)	Income			Region				Type of households		Total
	Up to 300 euros	300–600 euros	More than 600 euros	Beogradski	Vojvodina	Šumadija i Zapadna Srbija	Južna i Istočna Srbija	Urban	Other	

A3: What are the reasons for not having access to the Internet at home (tick all that apply)²⁾

Have access to the Internet elsewhere	2.2	9.3	17.0	18.0	2.9	7.2	3.3	8.4	3.2	5.4
Don't need the Internet	79.6	66.2	75.9	51.9	83.8	75.1	78.6	80.2	75.6	77.5
Equipment costs too high	22.6	23.0	7.1	21.9	13.8	15.6	29.2	16.4	20.4	18.7
Access costs too high	12.4	11.7	7.1	10.8	3.3	10.0	21.1	9.5	10.9	10.3
Lack of skills	12.3	13.5	7.8	12.8	12.4	5.5	12.7	11.6	9.4	10.3
Privacy and security concerns	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Broadband Internet not available	4.8	6.0	0.0	3.4	0.0	7.4	9.0	1.1	7.6	4.8
None of the above, other reasons	2.7	2.3	0.0	0.0	2.8	2.6	0.9	1.7	2.4	2.1

²⁾ Data refer to households that said "No" in question A1.

MODULE B_N: Use of computers

Response (individuals)	Age						Sex	
	16-24	25-34	35-44	45-54	55-64	65-74	Men	Women
B1_N: When did you last								
In the last three months	98.2	94.9	95.6	86.9	65.2	44.7	78.7	67.9
More than three months ago (less than a year)	0.0	0.0	0.0	1.6	3.7	1.5	1.1	1.7
More than a year ago	1.8	5.1	2.8	6.1	4.0	11.4	4.7	7.6
Never used it	0.0	0.0	1.6	5.4	27.0	42.5	15.5	22.8
B2_N: How often, on average, have you used								
Every day or almost every day	92.2	98.4	88.2	90.1	78.3	69.1	85.5	84.4
At least once a week	4.7	0.0	1.8	5.3	12.0	17.7	5.5	9.1
At least once a month	0.0	0.0	0.0	2.2	7.4	6.9	2.7	3.4
Less than once a moth	3.1	1.6	9.9	2.4	2.3	6.3	6.3	3.1

¹⁾ Data refer to individuals who said "In the last three months" in question B1_N.

Educational level			Employment status				Total	Response (individuals)
Lower than secondary	Secondary	Tertiary	Employee	Unemployed	Student	Other		

use a computer?

48.5	74.9	87.7	92.7	83.6	99.8	52.3	72.4	In the last three months
0.8	1.9	1.1	0.8	1.4	0.0	2.0	1.5	More than three months ago (less than a year)
5.0	7.4	5.6	2.7	5.6	0.2	9.5	6.4	More than a year ago
45.7	15.8	5.6	3.8	9.4	0.0	36.1	19.8	Never used it

a computer in the last three months?¹⁾

79.6	82.5	91.6	92.5	84.3	94.8	75.5	84.9	Every day or almost every day
13.2	8.0	3.8	2.9	5.2	5.2	14.7	7.5	At least once a week
2.7	3.3	2.9	2.0	2.2	0.0	5.4	3.1	At least once a month
4.5	6.2	1.7	2.6	8.3	0.0	4.4	4.5	Less than once a moth

MODULE B: Use of the Internet

Response (individuals)	Age						Sex	
	16–24	25–34	35–44	45–54	55–64	65–74	Men	Women
B1: When did you								
In the last three months	100.0	99.1	97.3	92.9	77.6	50.3	81.8	76.0
More than three months ago (less than a year)	0.0	0.9	0.7	0.9	1.3	1.2	0.5	1.3
More than a year ago	0.0	0.0	0.4	2.8	5.1	5.4	4.7	2.2
Never used it	0.0	0.0	1.6	3.4	15.9	43.1	13.0	20.5
B2: How often, on average, have you used								
Every day or almost every day	99.1	99.3	96.0	92.6	83.9	83.4	91.4	91.0
At least once a week	0.9	0.2	4.0	5.6	11.2	13.1	6.6	6.9
At least once a month	0.0	0.6	0.0	0.4	4.5	2.3	1.5	1.6
Less than once a moth	0.0	0.0	0.0	1.3	0.4	1.2	0.6	0.6
B2,1: Did you use the Internet								
Yes	98.6	99.3	97.3	93.3	93.5	84.7	94.3	93.6
No	1.4	0.7	2.7	6.7	6.5	15.3	5.7	6.4

¹⁾ Data refer to individuals who said “In the last three months” in question B1.

²⁾ Data refer to individuals who said “Every day or almost every day” in question B2.

Educational level			Employment status				Total	Response (individuals)
Lower than secondary	Secondary	Tertiary	Employee	Unemployed	Student	Other		

last use the Internet?

52.0	82.4	92.9	96.3	89.2	100.0	60.4	78.4	In the last three months
1.8	0.9	0.4	0.3	1.3	0.0	1.2	1.0	More than three months ago (less than a year)
2.7	3.7	2.8	1.2	2.3	0.0	5.2	3.2	More than a year ago
43.5	13.1	3.9	2.1	7.2	0.0	33.2	17.4	Never used it

the Internet in the last three months?¹⁾

90.1	89.0	95.6	94.9	93.2	98.0	85.3	91.2	Every day or almost every day
8.0	8.1	3.6	3.6	5.6	2.0	11.2	6.7	At least once a week
1.6	2.1	0.5	1.0	0.7	0.0	2.7	1.5	At least once a month
0.3	0.8	0.4	0.5	0.5	0.0	0.7	0.6	Less than once a moth

Several times during the day?²⁾

93.1	93.5	95.0	96.1	95.9	100.0	89.3	93.9	Yes
6.9	6.5	5.0	3.9	4.1	0.0	10.7	6.1	No

MODULE B: Use of the Internet

Response (individuals)	Age						Sex	
	16–24	25–34	35–44	45–54	55–64	65–74	Men	Women

B3: Which of the following activities did you perform over the Internet

Sending/receiving e-mails	53.6	64.7	52.0	56.3	46.0	26.7	51.7	45.9
Telephoning over the Internet/video-calls	92.5	90.5	86.8	80.7	72.6	70.0	77.3	82.9
Participating in social networks (Facebook, Twitter)	86.1	95.8	82.2	73.6	56.6	50.3	73.1	69.8
Sending online messages via WhatsApp, Viber, Skype, Messenger	92.6	92.7	89.9	86.6	73.6	76.7	81.8	85.6
Reading online newspapers, magazines	54.0	78.2	73.5	77.1	75.7	75.3	70.6	75.8
Seeking health-related information	39.8	57.8	58.7	61.2	64.1	54.2	46.7	65.2
Finding information about goods and services	53.8	79.9	78.8	74.2	70.2	58.0	71.1	68.5
Watching video content via sharing services (such as Youtube)	74.1	79.2	75.8	68.2	55.7	45.3	67.1	62.6
Watching Internet streamed TV (live of catch-up) from TV broadcasters	40.9	30.6	38.5	27.3	23.1	14.2	30.6	25.5
Playing or downloading video games	46.6	34.1	18.5	20.0	11.0	10.0	23.0	18.7
Uploading self-created content (text, photos, music, videos, software, etc.)	48.2	41.6	31.7	27.5	18.7	8.6	26.1	27.1
Listening to music (web radio, music streaming)	73.1	52.4	49.4	46.4	34.4	24.0	47.4	40.8
Sale of goods or services, e.g. via auctions (such as eBay)	9.4	20.2	9.8	7.0	6.0	1.1	9.4	7.1
Internet banking	12.3	30.4	20.6	24.4	22.2	10.4	21.5	18.9

B4: Have you use cloud services for storage of files (such as Google drive, Dropbox, Windows OneDrive,

Yes	21.7	28.6	24.2	19.6	11.5	4.4	18.8	15.8
No	78.3	71.4	75.8	80.4	88.5	95.6	81.2	84.2

¹⁾ Data refer to individuals who said "In the last three months" in question B1.

Educational level			Employment status				Total	Response (individuals)
Lower than secondary	Secondary	Tertiary	Employee	Unemployed	Student	Other		

for private purposes in the last three months?¹⁾ (tick all that apply)

30.3	42.0	68.8	63.4	48.0	61.8	31.7	48.4	Sending/receiving e-mails
78.2	78.3	85.7	84.8	83.3	97.0	72.6	80.5	Telephoning over the Internet/video-calls
63.4	69.2	78.8	79.5	79.5	89.4	55.3	71.2	Participating in social networks (Facebook, Twitter)
87.9	81.8	86.2	85.9	88.1	86.9	78.9	84.0	Sending online messages via WhatsApp, Viber, Skype, Messenger
60.3	72.4	82.1	80.6	66.0	59.1	72.8	73.6	Reading online newspapers, magazines
43.8	55.0	68.0	64.3	52.8	52.9	53.5	57.3	Seeking health-related information
49.9	70.4	77.7	77.6	73.7	61.4	59.2	69.6	Finding information about goods and services
61.7	62.9	68.7	68.4	72.7	86.1	52.8	64.5	Watching video content via sharing services (such as Youtube)
18.7	28.6	30.2	30.1	32.9	33.8	20.9	27.6	Watching Internet streamed TV (live of catch-up) from TV broadcasters
20.2	22.7	16.7	20.8	23.2	43.5	16.2	20.5	Playing or downloading video games
26.7	25.2	29.3	29.3	31.5	37.1	19.6	26.7	Uploading self-created content (text, photos, music, videos, software, etc.)
40.5	39.1	53.4	53.5	39.5	66.1	33.9	43.6	Listening to music (web radio, music streaming)
3.9	8.4	9.6	10.7	8.8	13.4	4.4	8.1	Sale of goods or services, e.g. via auctions (such as eBay)
8.6	16.9	31.3	31.3	15.5	27.3	10.7	20.0	Internet banking

(documents, pictures, music or video files) for private purposes in the last three months
eCloud, Amazon Cloud Drive)?

12.0	13.0	27.3	23.1	18.7	25.4	9.1	17.1	Yes
88.0	87.0	72.7	76.9	81.3	74.6	90.9	82.9	No

MODULE B Use of the Internet

Response (individuals)	Age						Sex	
	16–24	25–34	35–44	45–54	55–64	65–74	Men	Women

B5: Which of the following learning activities have you carried out over the Internet

Doing an online course	13.5	10.9	6.9	7.5	3.5	1.7	6.3	6.6
Finding online learning materials (audio-visual materials, online learning software, electronic textbooks...)	29.0	19.9	21.8	19.5	12.4	8.9	16.7	17.9
Communication with instructors or students using websites or portals	12.3	2.3	4.3	6.3	2.3	0.1	4.9	3.4
Never carried out learning activities over the Internet	67.6	76.3	77.6	79.5	87.4	90.3	82.1	80.6

¹⁾ Data refer to individuals who said "In the last three months" in questions B1.

Educational level			Employment status				Total	Response (individuals)
Lower than secondary	Secondary	Tertiary	Employee	Unemployed	Student	Other		
3.5	5.0	10.5	8.1	5.7	17.1	4.3	6.5	Doing an online course
12.2	15.2	23.9	22.7	13.5	37.2	12.7	17.4	Finding online learning materials (audio-visual materials, online learning software, electronic textbooks...)
3.9	2.9	6.2	4.9	3.0	9.6	3.3	4.0	Communication with instructors or students using websites or portals
87.7	83.2	74.6	76.4	84.5	60.2	86.1	81.3	Never carried out learning activities over the Internet

MODULE C: e-government

Response (individuals)	Age						Sex	
	16-24	25-34	35-44	45-54	55-64	65-74	Men	Women

C1: For which of the following public authorities' services

Obtaining information from public authorities websites	45.3	45.4	47.4	41.7	22.6	13.2	36.3	32.2
Downloading/printing official forms	29.6	23.8	39.2	36.1	18.2	8.3	28.1	23.0
Sending completed forms	27.1	22.3	38.7	34.8	15.3	8.7	26.7	21.8

C2: What are the reasons for not having submitted completed forms to public authorities

No need to send completed forms	89.0	82.3	71.2	79.7	77.5	70.1	72.9	79.1
There were no such online services available	0.0	4.7	3.3	0.6	2.6	4.3	3.6	2.3
Lack of skills	1.8	5.2	2.7	7.2	10.6	13.3	9.0	7.5
Concerns about security and protection of personal data	0.4	1.6	0.4	2.3	0.8	1.5	1.4	1.1
Another person did it on my behalf	5.7	4.4	3.3	5.1	3.1	6.6	3.6	5.5
Other reasons	3.1	2.1	19.2	6.1	6.8	4.9	9.9	5.3

¹⁾ Data refer to individuals who said "In the last three months" of "More than three months ago (less than a year ago)" in question B1".

²⁾ Data refer to individuals who did not said "Sending completed forms" in question C1.

Educational level			Employment status				Total	Response (individuals)
Lower than secondary	Secondary	Tertiary	Employee	Unemployed	Student	Other		

have you used the Internet in the last 12 months?¹⁾ (tick all that apply)

25.9	31.1	43.2	44.6	39.3	49.4	18.1	34.0	Obtaining information from public authorities websites
19.1	21.9	34.2	35.5	27.5	26.7	12.9	25.2	Downloading/printing official forms
13.9	22.0	32.4	33.9	26.7	25.0	11.7	23.9	Sending completed forms

over the Internet. for private purposes. in the last 12 months?²⁾

78.6	74.8	79.2	81.0	75.2	93.6	73.2	76.6	No need to send completed forms
1.4	1.3	6.8	3.1	1.9	0.0	3.2	2.8	There were no such online services available
9.0	10.3	3.0	5.8	5.8	0.0	11.6	8.1	Lack of skills
1.5	1.1	1.2	0.9	2.1	0.0	1.0	1.2	Concerns about security and protection of personal data
5.1	4.1	5.9	4.0	3.2	0.0	6.4	4.7	Another person did it on my behalf
5.4	8.9	4.7	6.1	12.9	6.4	5.0	7.2	Other reasons

MODULE D: E-commerce¹⁾

Response (individuals)	Age						Sex	
	16-24	25-34	35-44	45-54	55-64	65-74	Men	Women

D1: When did you last (for private purpose) buy/

In the last three months	59.1	49.6	56.6	37.9	20.5	11.7	38.7	34.2
More than three months ago (less than a year)	10.4	13.5	13.4	17.6	10.3	6.2	12.9	11.0
More than a year ago	11.9	12.2	15.8	8.9	6.0	3.0	12.5	6.6
Never used it	18.6	24.8	14.2	35.6	63.3	79.1	36.0	48.2

D2: What types of goods or services have you ordered/bought (for private purposes)

Food or beverages from stores or meal-kits providers	6.8	1.1	5.3	3.6	1.6	11.0	4.5	4.4
Furniture, home accessories (such as carpets or curtains or gardening products)	10.6	8.3	18.1	20.9	23.3	19.7	14.6	17.8
Medicines or dietary supplements	12.9	4.8	8.4	7.6	8.3	20.8	6.8	11.2
Clothes, sports goods	48.7	54.8	59.8	55.4	37.0	39.7	47.2	56.5
Computers, tablets, mobile phones or accessories	34.4	15.3	16.4	8.8	12.5	3.9	18.8	14.5
Consumer electronics (TV sets, stereos, cameras) or household appliances (such as washing machines)	28.0	18.1	19.6	16.9	20.3	18.1	29.9	12.0
Sports goods (excluding sports clothing)	24.1	21.2	38.8	21.8	23.6	6.1	23.8	27.8
Children toys or children ites (nappies, bottles, baby strollers)	15.9	24.1	17.7	15.7	2.4	2.2	12.7	17.7
Music as CDs, vinyls, etc.	9.8	6.3	7.0	4.8	5.1	1.1	6.5	6.1
Deliveries from restaurants, fast food chains, catering services	8.7	9.6	10.1	5.6	8.2	1.6	9.8	6.7
Films or series as DVDs, Bly-Ray	12.2	8.1	6.5	3.7	1.2	6.2	6.4	6.7
Printing books/magazines/newspapers	14.2	5.8	21.4	11.0	7.7	7.0	10.0	15.3
Cosmetics, beauty or wellness products	9.1	15.5	13.2	19.1	10.0	1.0	11.4	14.1
Cleaning products or personal hygiene products	1.2	1.9	6.7	5.5	1.4	2.2	2.5	4.9
Bicycles, mopeds, cars or other vehicles or spare parts	2.1	9.5	4.2	10.1	18.2	14.2	9.7	6.9
Other physical goods	0.0	0.0	0.2	0.9	0.0	0.0	0.0	0.4

¹⁾ Data refer to individuals who said "In the last three months" or "More than three months ago (less than a year)" in question B1.

²⁾ Data refer to individuals who said "In the last three months" in question D1.

Educational level			Employment status				Total	Response (individuals)
Lower than secondary	Secondary	Tertiary	Employee	Unemployed	Student	Other		

order goods or services over the Internet?

28.5	37.0	38.3	47.7	36.7	61.5	21.5	36.1	In the last three months
12.1	11.3	12.5	14.5	13.6	6.8	8.3	11.8	More than three months ago (less than a year)
6.6	10.3	8.0	7.4	15.8	11.8	5.9	9.1	More than a year ago
52.8	41.4	41.2	30.3	34.0	19.8	64.3	43.0	Never used it

over the Internet in the last three months? (tick all that apply)²⁾

5.4	3.8	5.2	4.1	1.9	2.0	8.8	4.4	Food or beverages from stores or meal-kits providers
11.2	19.2	13.3	14.2	18.2	24.0	17.1	16.4	Furniture, home accessories (such as carpets or curtains or gardening products)
20.1	5.7	11.2	5.8	7.0	7.7	19.7	9.2	Medicines or dietary supplements
52.5	51.0	54.4	56.0	58.2	34.3	41.9	52.3	Clothes, sports goods
32.3	14.7	13.7	14.3	13.5	18.2	24.4	16.5	Computers, tablets, mobile phones or accessories
20.7	21.2	18.1	21.7	17.0	14.8	21.8	20.2	Consumer electronics (TV sets, stereos, cameras) or household appliances (such as washing machines)
21.0	26.8	26.3	30.0	25.5	15.9	20.1	26.0	Sports goods (excluding sports clothing)
17.3	15.9	13.7	17.1	18.4	8.8	9.9	15.4	Children toys or children ites (nappies, bottles, baby strollers)
11.1	6.3	4.6	6.4	6.0	6.7	6.3	6.3	Music as CDs, vinyls, etc.
4.4	8.3	9.1	9.7	7.7	9.5	4.6	8.1	Deliveries from restaurants, fast food chains, catering services
7.7	7.7	4.2	5.4	7.3	8.8	7.8	6.6	Films or series as DVDs, Bly-Ray
10.0	13.9	12.0	16.8	8.5	14.0	8.8	12.9	Printing books/magazines/newspapers
20.4	13.0	9.9	14.0	11.3	25.3	8.9	12.9	Cosmetics, beauty or wellness products
2.9	4.7	2.6	5.4	3.8	3.5	0.3	3.8	Cleaning products or personal hygiene products
7.7	8.5	7.9	8.6	6.8	6.1	9.5	8.2	Bicycles, mopeds, cars or other vehicles or spare parts
0.0	0.3	0.2	0.1	0.7	0.0	0.0	0.2	Other physical goods

MODULE D: E-commerce¹⁾

Response (individuals)	Age						Sex	
	16–24	25–34	35–44	45–54	55–64	65–74	Men	Women
D3: From whom have you bought the mentioned goods via website								
National sellers	94.7	88.6	92.8	94.5	87.0	97.5	93.0	91.8
Sellers from EU countries	12.2	9.6	15.7	9.4	19.7	18.3	10.5	15.9
Sellers from the rest of the world	20.0	22.7	29.5	20.4	28.2	18.4	22.9	25.1
Country of origin of seller unknown	0.0	0.0	0.2	0.0	2.2	0.9	0.2	0.5
D4: Did you buy any of the mentioned goods from private persons								
Yes	58.1	66.8	71.0	68.2	69.8	29.7	65.5	64.0
No	41.9	33.2	29.0	31.8	30.2	70.3	34.5	36.0
D5: Have you bought or subscribed to any of the following via website or apps for private purposes								
Music as a streaming service of downloads	10.7	3.7	3.8	1.7	0.9	1.2	5.5	2.8
Films or series as streaming service or downloads	6.4	11.5	11.4	8.6	1.4	0.0	10.4	6.3
Electronic books, online magazines or online newspapers	0.0	4.7	2.1	0.5	2.2	0.8	2.8	1.0
Online games or downloads for smartphones, tablets, computers or consoles	2.7	2.0	2.1	2.9	0.0	0.6	1.3	2.6
Computers or other software downloaded, including upgrades	0.0	0.0	0.1	1.2	0.0	0.0	0.1	0.4
Apps related to health or fitness (excluding free apps)	0.0	0.0	2.6	3.0	1.1	0.0	0.5	2.2
Other apps (related to language learning, travelling, time), excluding free apps	3.6	0.0	0.8	1.6	5.2	0.0	0.6	2.7
Never bought or subscribed to any of the mentioned	79.3	83.5	80.0	84.2	90.4	97.5	82.4	84.7
D6: Have you bought or subscribed to any of the following via website a								
Tickets for sports events	15.3	11.1	10.6	9.9	8.3	3.8	12.8	8.8
Tickets for cultural or other events	13.3	15.0	18.7	15.2	13.2	5.3	15.4	14.6
Subscription to the Internet of mobile phone connection	9.0	9.5	10.3	8.9	9.7	7.1	9.2	9.5

¹⁾ Data refer to individuals who said “In the last three months” or “More than three months ago (less than a year) in question B1.

²⁾ Data refer to individuals who said “Yes” to any of the proposed answers in question D2.

³⁾ Data refer to individuals who said “In the last three months” in question D1.

Educational level			Employment stats				Total	Responses (individuals)
Lower than secondary	Secondary	Tertiary	Employee	Unemployment	Student	Other		
or apps in the last three months? (tick all that apply) ²⁾								
91.6	94.7	88.5	92.1	90.3	94.7	95.0	92.4	National sellers
15.6	9.7	19.2	15.4	9.1	14.9	13.7	13.4	Sellers from EU countries
18.6	20.9	31.6	29.1	21.4	15.7	17.4	24.1	Sellers from the rest of the world
0.0	0.1	0.9	0.6	0.0	0.0	0.3	0.4	Country of origin of seller unknown
over website or apps (via eBay, Facebook Marketplace)?								
78.1	67.2	55.2	66.4	71.1	64.2	53.3	64.7	Yes
21.9	32.8	44.8	33.6	28.9	35.8	46.7	35.3	No
in the last three months to multimedia contents? (tick all that apply) ³⁾								
11.9	1.5	5.5	3.7	3.5	0.0	6.4	4.0	Music as a streaming service of downloads
1.6	9.5	8.1	12.9	4.1	13.4	0.7	8.1	Films or series as streaming service or downloads
0.0	0.9	4.1	2.9	1.5	0.0	0.2	1.8	Electronic books, online magazines or online newspapers
1.3	2.1	2.1	1.7	3.4	2.1	1.2	2.0	Online games or downloads for smartphones, tablets, computers or consoles
0.0	0.3	0.2	0.1	0.7	0.0	0.0	0.3	Computers or other software downloaded, including upgrades
0.9	1.1	2.2	2.1	0.1	0.0	1.7	1.4	Apps related to health or fitness (excluding free apps)
1.7	1.9	1.6	1.1	1.6	12.1	1.0	1.7	Other apps (related to language learning, travelling, time), excluding free apps
82.7	84.3	82.9	79.4	89.2	72.4	89.6	83.6	Never bought or subscribed to any of the mentioned
or apps for private purposes in the last three months? (tick all that apply) ³⁾								
2.3	10.4	14.0	13.4	9.1	22.7	3.1	10.6	Tickets for sports events
1.7	13.6	22.2	17.8	14.7	20.8	7.2	15.0	Tickets for cultural or other events
1.6	9.3	12.4	12.6	6.0	14.0	4.8	9.4	Subscription to the Internet of mobile phone connection

MODULE D: E-commerce¹⁾

Response (individuals)	Age						Sex	
	16–24	25–34	35–44	45–54	55–64	65–74	Men	Women
Subscription electricity, water or heating supply, waste disposal or similar services	4.1	10.5	11.4	10.6	8.1	6.7	9.3	9.1
Services for households (such as cleaning, babysitting, repair work, gardening) also when bought from private persons, e.g. Facebook Marketplace	0.0	0.0	2.4	4.6	1.5	2.4	1.3	2.4
Did not buy or subscribe to any of the above	77.9	77.9	69.9	76.3	80.6	85.7	76.1	76.2
D7: Did you buy any of the above mentioned services for households from private persons								
Yes	9.3	24.7	28.3	24.3	23.8	14.9	24.8	20.2
No	90.7	75.3	71.7	75.7	76.2	85.1	75.2	79.8
D8: Did you buy any transport services via website or app								
A transport enterprise such as local bus, flight ticket, taxi ride (e.g. UBER)	12.2	10.2	24.9	14.3	13.1	9.1	18.1	13.8
Private person	0.0	0.6	2.5	1.9	2.6	0.0	2.5	0.6
Did not buy any transport services	87.8	89.2	73.2	83.8	84.3	90.9	79.8	85.6
D9: Did you rent accommodation via website or app								
An enterprise such as hotels or travel agencies	13.6	10.0	20.5	13.3	13.7	14.7	16.8	13.3
A private persons (such as Airbnb)	8.2	13.3	12.9	12.6	9.5	5.6	10.8	11.7
Did not rent accommodation via website or app	78.2	76.7	71.3	76.5	79.9	82.1	75.5	76.6
D11: How many times did you buy goods or services								
1–2 times	69.9	44.1	49.0	43.9	51.3	51.1	46.1	55.1
3–5 times	21.3	38.7	36.1	41.9	41.3	25.3	40.6	30.5
6–10 times	5.1	12.9	12.5	10.8	2.1	18.7	9.3	11.0
More than 10 times	3.6	4.3	2.4	3.4	5.3	4.9	4.0	3.3

¹⁾ Data refer to individuals who said “In the last three months” or “More than three months ago (less than a year)” in question B1.

²⁾ Data refer to individuals who said “Yes” to the option in D6e.

³⁾ Data refer to individuals who said “In the last three months” in question D1.

Educational level			Employment status				Total	Response (individuals)
Lower than secondary	Secondary	Tertiary	Employee	Unemployed	Student	Other		
2.5	7.9	13.9	13.5	4.1	5.3	5.9	9.2	Subscription electricity, water or heating supply, waste disposal or similar services
0.9	1.2	3.4	2.5	0.4	0.0	2.7	1.9	Services for households (such as cleaning, babysitting, repair work, gardening) also when bought from private persons, e.g. Facebook Marketplace
96.4	76.6	68.0	68.7	81.8	72.0	87.8	76.1	Did not buy or subscribe to any of the above
Via website or app (e.g. via Facebook Marketplace) ²⁾								
16.3	25.0	19.8	26.1	22.7	16.5	14.8	22.3	Yes
83.7	75.0	80.2	73.9	77.3	83.5	85.2	77.7	No
for private purposes in the last three months from? (tick all that apply) ³⁾								
1.0	14.7	22.9	19.5	14.8	11.2	9.2	15.8	A transport enterprise such as local bus, flight ticket, taxi ride (e.g. UBER)
0.0	2.0	1.1	2.3	1.5	0.0	0.0	1.5	Private person
99.0	83.3	76.6	78.6	83.8	88.8	90.8	82.9	Did not buy any transport services
for private purposes in the last three months from? (tick all that apply) ³⁾								
9.3	13.4	19.5	19.4	9.1	5.5	13.5	14.9	An enterprise such as hotels or travel agencies
4.0	9.2	17.5	13.3	11.5	8.7	6.9	11.3	A private persons (such as Airbnb)
86.9	78.3	68.5	71.4	79.5	85.7	80.8	76.1	Did not rent accommodation via website or app
over the Internet for private purposes in the last three months? ³⁾								
54.4	53.8	45.0	51.2	39.2	66.3	60.3	51.0	1-2 times
36.2	33.6	37.3	32.7	49.3	26.0	26.8	35.1	3-5 times
5.7	9.4	13.3	12.2	10.2	4.8	7.3	10.2	6-10 times
3.8	3.2	4.4	4.0	1.4	2.9	5.6	3.6	More than 10 times

MODULE D: E-commerce¹⁾

Response (individuals)	Age						Sex	
	16–24	25–34	35–44	45–54	55–64	65–74	Men	Women

D12: How much money have you spent on your purchases of goods via website or app

Less than 50 euros	68.0	61.3	50.5	47.4	60.8	44.9	48.4	61.6
From 50 to 100 euros	14.8	24.9	21.0	22.5	27.4	27.2	24.9	19.7
From 100 to 300 euros	9.0	11.0	21.6	21.8	7.2	13.3	16.7	14.4
From 300 to 500 euros	1.5	2.5	3.8	3.0	4.0	3.3	5.6	0.9
From 500 to 700 euros	0.0	0.3	1.4	1.6	0.2	0.0	0.7	0.8
From 700 to 1000 euros	1.4	0.0	1.7	1.0	0.3	0.7	2.2	0.0
More than 1000 euros	0.0	0.0	0.0	0.3	0.0	0.3	0.0	0.1
Don't know	5,4	0,0	0,0	2,3	0,0	10,3	1,4	2,5

D13: Have you carried out any of the following activities via website or app

Buy insurance policy, including travel insurance, also as a package with another service, e.g. with plane ticket	1.6	2.7	8.0	6.1	5.0	1.9	5.6	4.2
Take a loan, mortgage or credit from banks or other financial institutions	0.8	0.0	2.2	0.0	0.0	0.0	1.1	0.4
Buy or sell shares, bonds, units in funds or other financial assets	0.0	0.0	0.5	0.0	0.0	0.4	0.4	0.0
Haven't carried out any of the mentioned activities	97.6	97.3	90.3	93.9	95.0	97.7	93.5	95.3

¹⁾ Data refer to individuals who said "In the last three months" or "More than three months ago (less than a year) in question B1.

²⁾ Data refer to individuals who said "In the last three months" in question D1.

³⁾ Data refer to individuals who said "In the last three months" in question B1.

Educational level			Employment status				Total	Response (individuals)
Lower than secondary	Secondary	Tertiary	Employee	Unemployed	Student	Other		

for private purposes in the last three months? (tick all that apply)²⁾

60.3	55.1	54.6	51.3	56.6	67.2	60.9	55.6	Less than 50 euros
9.4	26.9	18.2	22.8	23.6	21.3	18.8	22.1	From 50 to 100 euros
18.5	13.2	18.3	18.5	14.9	7.8	11.3	15.5	From 100 to 300 euros
0.0	3.5	3.3	4.1	2.7	0.0	1.7	3.0	From 300 to 500 euros
0.2	0.5	1.6	1.3	0.3	0.0	0.4	0.8	From 500 to 700 euros
4.0	0.4	1.0	0.9	1.9	0.0	0.4	1.0	From 700 to 1000 euros
0.0	0.0	0.2	0.1	0.0	0.0	0.1	0.1	More than 1000 euros
7.6	0.4	2.8	1.0	0.0	3.8	6.4	2.0	Don't know

for private purposes in the last three months? (tick all that apply)³⁾

0.9	4.3	7.1	6.8	4.8	0.0	1.6	4.9	Buy insurance policy, including travel insurance, also as a package with another service, e.g. with plane ticket
0.4	0.8	0.7	1.0	0.5	0.0	0.7	0.8	Take a loan, mortgage or credit from banks or other financial institutions
0.0	0.0	0.5	0.3	0.0	0.0	0.1	0.2	Buy or sell shares, bonds, units in funds or other financial assets
98.7	94.8	92.5	92.5	94.7	100.0	97.6	94.5	Haven't carried out any of the mentioned activities

MODULE E: Privacy and protection of personal data¹⁾

Response (individuals)	Age						Sex	
	16–24	25–34	35–44	45–54	55–64	65–74	Men	Women
E1: Have you carried out any of the following to manage access								
Read privacy policy statements before providing personal data	48.8	47.6	41.6	38.2	30.3	15.9	33.8	35.9
Restricted or refused access to your geographical location	49.2	48.8	45.3	29.9	20.4	9.1	31.7	30.4
Limited access to profile or content on social networking sites or shared online storage	44.1	43.0	35.5	21.1	17.5	6.7	25.2	25.2
Refused allowing the use of personal data for advertising purposes	33.1	30.6	34.9	22.9	15.6	8.8	23.1	22.5
Checked that website where you procured personal data was secure (e.g. https websites, safety logo or certificate)	19.9	20.9	18.5	12.3	5.8	2.9	14.2	10.5
Haven't carried out any of the mentioned	39.2	33.3	42.8	52.8	65.2	79.8	55.2	55.0
E2: Did you know that cookies could be used to trace movements of people on								
Yes	56.5	53.6	61.4	53.7	43.7	33.8	56.4	44.1
No	43.5	46.4	38.6	46.3	56.3	66.2	43.6	55.9
E3: Have you changed the settings in your Internet browser								
Yes	30.1	21.0	21.0	20.8	14.0	4.4	22.1	13.5
No	69.9	79.0	79.0	79.2	86.0	95.6	77.9	86.5
E5: Did you use software that limits the ability to track								
Yes	12.0	10.7	8.1	9.5	4.1	2.2	9.0	5.7
No	88.0	89.3	91.9	90.5	95.9	97.8	91.0	94.3

¹⁾ Data refer to individuals who said "In the last three months" in question B1.

Educational level			Employment status				Total	Response (individuals)
Lower than secondary	Secondary	Tertiary	Employee	Unemployed	Student	Other		

to your personal data over the Internet in the last three months? (tick all that apply)

20.8	34.2	43.6	44.4	35.1	59.2	23.1	35.0	Read privacy policy statements before providing personal data
16.8	31.8	36.5	42.7	31.4	52.7	16.6	30.9	Restricted or refused access to your geographical location
18.8	26.1	26.8	32.5	25.3	61.0	14.3	25.2	Limited access to profile or content on social networking sites or shared online storage
11.8	23.6	26.8	31.8	20.8	45.2	12.8	22.8	Refused allowing the use of personal data for advertising purposes
9.0	12.2	13.5	16.6	11.0	27.5	6.9	12.1	Checked that website where you procured personal data was secure (e.g. https websites, safety logo or certificate)
73.3	55.3	45.5	42.1	54.8	24.1	71.3	55.1	Haven't carried out any of the mentioned

the Internet to make a profile of each user and service them tailored adds?

36.1	48.0	58.2	58.7	51.2	62.4	37.1	49.3	Yes
63.9	52.0	41.8	41.3	48.8	37.6	62.9	50.7	No

to prevent or restrict cookies on any of your devices ?

5.5	16.7	23.7	24.8	14.4	47.3	8.4	17.1	Yes
94.5	83.3	76.3	75.2	85.6	52.7	91.6	82.9	No

your activities on the Internet on any of your devices?

1.7	6.5	10.9	9.7	6.9	16.9	3.7	7.1	Yes
98.3	93.5	89.1	90.3	93.1	83.1	96.3	92.9	No

MODULE F: Trust, security and privacy¹⁾

Response (individuals)	Age						Sex	
	16–24	25–34	35–44	45–54	55–64	65–74	Men	Women
F1: Have you used the following identification procedures for accessing online services								
Simple login with username and password	85.7	82.5	74.6	71.7	50.4	39.2	64.3	64.2
Social media login for other services	45.9	47.4	30.3	28.7	20.4	14.8	26.9	30.0
A security token	14.6	13.9	18.6	15.8	8.9	4.5	15.1	10.1
Electronic identification certificate or card used for example with a card reader or with an app	2.1	8.5	9.9	5.3	5.3	2.2	6.4	5.0
Procedure involving the use of a mobile phone (via a code received via a message)	34.6	37.3	27.2	21.1	19.9	13.0	22.5	24.7
Simple use of pin code list (plastic card with codes, scratch codes, etc.) or random characters of a password	14.2	16.2	14.0	9.8	7.3	4.0	10.2	10.1
Other electronic identification procedure	2.9	2.6	3.9	2.8	1.0	1.5	3.3	1.7
Never used any of electronic identification procedure	8.4	13.5	22.8	23.4	43.2	56.3	30.9	31.2
F2: Do you use a smart phone								
Yes	94.0	91.2	90.3	86.1	81.3	82.4	86.0	87.0
No	6.0	8.8	9.7	13.9	18.7	17.6	14.0	13.0
F3: Does your smartphone have kind of software protection								
Yes, automatically installed or provided with the operating system	50.9	46.4	46.8	44.2	37.8	35.7	47.0	39.8
Yes, I installed it or subscribed to it or somebody did ti	8.8	11.7	13.1	21.0	16.9	10.2	13.0	14.8
No	32.3	30.1	27.5	17.0	18.1	27.9	27.6	22.6
Don't know	8.5	11.9	13.4	17.8	27.6	26.9	12.8	23.1

¹⁾ Data refer to individuals who said "In the last three months" in question B1.

²⁾ Data refer to individuals who said "Yes" in question F2.

Educational level			Employment status				Total	Response (individuals)
Lower than secondary	Secondary	Tertiary	Employee	Unemployed	Student	Other		

via website or app for private purposes in the last three months? (tick all that apply)

49.5	63.0	73.7	77.1	65.0	80.1	49.0	64.2	Simple login with username and password
22.1	28.3	32.7	34.1	30.8	50.8	19.6	28.7	Social media login for other services
6.0	10.6	18.3	19.2	9.4	11.1	7.2	12.3	A security token
1.6	4.1	10.3	9.0	4.3	1.8	3.3	5.6	Electronic identification certificate or card used for example with a card reader or with an app
15.0	21.5	32.3	30.5	21.4	31.2	17.9	23.8	Procedure involving the use of a mobile phone (via a code received via a message)
7.0	8.2	15.2	15.3	7.9	9.1	6.5	10.1	Simple use of pin code list (plastic card with codes, scratch codes, etc.) or random characters of a password
1.4	1.9	3.8	4.3	0.3	0.0	2.1	2.4	Other electronic identification procedure
45.2	32.0	22.4	19.1	31.0	12.0	45.2	31.1	Never used any of electronic identification procedure

for private purposes?

77.4	86.6	91.2	90.8	86.1	91.6	82.2	86.6	Yes
22.6	13.4	8.8	9.2	13.9	8.4	17.8	13.4	No

or services such as antivirus, antispam or firewall?²⁾

43.9	42.0	43.9	48.6	40.0	50.6	37.6	42.9	Yes, automatically installed or provided with the operating system
9.9	15.2	13.9	14.2	13.9	10.7	14.4	14.1	Yes, I installed it or subscribed to it or somebody did it
26.6	24.5	24.3	22.0	31.1	24.9	23.2	24.7	No
19.8	18.8	18.2	15.6	15.3	13.9	25.3	18.8	Don't know

MODULE F: Trust, security and privacy

Response (individuals)	Age						Sex	
	16–24	25–34	35–44	45–54	55–64	65–74	Men	Women

F4: Have you ever lost information, documents, pictures or any other kind of data on your

Yes	7.8	6.1	6.4	7.7	8.7	4.1	6.5	6.9
No	91.9	92.8	92.8	91.1	87.9	91.2	92.3	90.3
Don't know	0.2	1.1	0.9	1.2	3.4	4.7	1.1	2.8

F5: When using or installing an app on your smartphone, have you restricted

Yes	40.5	35.9	30.9	24.7	16.9	8.9	26.8	23.0
No	51.0	56.6	63.9	65.5	66.9	75.9	62.2	66.4
Didn't know it was possible	4.7	3.9	2.6	4.7	10.0	10.8	6.1	6.6
Not applicable (don't use apps)	3.8	3.6	2.6	5.1	6.1	4.5	4.8	4.0

Educational level			Employment status				Total	Response (individuals)
Lower than secondary	Secondary	Tertiary	Employee	Unemployed	Student	Other		

Smart phone as a result of a virus or other hostile type of program?

7.2	7.0	6.2	7.4	7.5	3.8	5.8	6.7	Yes
88.9	91.1	92.2	91.9	90.8	95.5	90.1	91.2	No
3.9	1.9	1.7	0.6	1.7	0.7	4.2	2.1	Don't know

or refused access to your personal data (e.g. location, contact, contact list)?

26.5	22.4	27.7	28.5	27.3	53.1	15.3	24.6	Yes
60.4	67.6	61.4	62.3	63.1	44.7	70.5	64.7	No
8.8	6.4	5.3	4.4	5.4	0.0	10.0	6.4	Didn't know it was possible
4.4	3.7	5.6	4.8	4.2	2.2	4.2	4.4	Not applicable (don't use apps)

MODULE G: Internet of smart devices¹⁾

Response (individuals)	Age						Sex	
	16–24	25–34	35–44	45–54	55–64	65–74	Men	Women

G1: Have you used any of the following Internet-connected devices or systems

Internet-connected thermostat, lights, plug-ins or other Internet-connected solutions for energy management for your home	3.9	3.4	2.7	2.0	1.9	1.0	2.2	2.3
Internet-connected home alarm system, smoke detector, security cameras, door locks or other Internet-connected security/safety solutions for your home	5.5	3.7	5.7	4.2	3.5	2.1	4.7	3.4
Internet-connected home appliances, such as robot vacuums, fridges, ovens, coffee machines	1.7	1.8	1.6	0.7	0.7	1.8	0.7	1.8
Virtual assistant in the form of a smart speaker or app, such as Google Home, Amazon Alexa/Echo/Computer, Google Assistant, Siri, Cortana, Bixby	0.5	0.6	0.4	0.0	0.2	0.0	0.2	0.3
Haven't used any of the above mentioned	91.0	91.6	92.6	94.5	94.0	95.8	93.6	93.6

G2: What are the reasons for not having used any of the mentioned Internet-connected devices or systems

I didn't know such devices or systems exist	10.4	7.1	7.1	7.8	12.2	14.2	8.4	11.3
I had no need to use those connected devices/systems	68.4	86.4	71.3	81.3	73.2	75.0	75.3	76.5
Costs too high	6.2	5.7	4.1	10.6	7.8	4.6	5.4	7.5
Lack of compatibility with other devices or systems	8.2	4.3	6.0	6.1	6.5	5.4	5.3	6.6
Lack of skills to use those devices or systems	3.8	1.3	1.3	1.2	3.9	2.5	2.9	1.8
Concerns about privacy and protection of data about me generated by those devices or systems	0.0	0.2	0.0	0.2	0.8	0.9	0.6	0.3
Concerns about security e.g. that the device or system will be hacked)	0.0	0.0	0.0	0.5	0.9	0.7	0.7	0.2
Concerns about security or health (e.g. that the use of the device or system could lead to an accident, injury or health problems)	0.0	0.9	1.5	0.2	1.4	1.2	1.0	1.0
Other reasons	6.8	1.4	11.6	3.6	4.4	1.6	7.0	3.1

¹⁾ Data refer to individuals who said "In the last three months" in question B1.

²⁾ Data refer to individuals who said "Yes" to option G1e.

Educational level			Employment status				Total	Response (individuals)
Lower than secondary	Secondary	Tertiary	Employee	Unemployed	Student	Other		

for private purposes? (tick all that apply)

2.2	2.5	1.9	3.7	0.7	3.3	1.7	2.3	Internet-connected thermostat, lights, plug-ins or other Internet-connected solutions for energy management for your home
2.1	4.3	4.3	5.8	2.9	8.0	2.4	4.0	Internet-connected home alarm system, smoke detector, security cameras, door locks or other Internet-connected security/safety solutions for your home
0.3	1.5	1.5	1.8	0.1	5.1	1.2	1.3	Internet-connected home appliances, such as robot vacuums, fridges, ovens, coffee machines
0.0	0.2	0.5	0.4	0.0	0.0	0.3	0.3	Virtual assistant in the form of a smart speaker or app, such as Google Home, Amazon Alexa/Echo/Computer, Google Assistant, Siri, Cortana, Bixby
95.5	93.2	93.3	90.8	96.4	90.2	94.8	93.6	Haven't used any of the above mentioned

for private purposes?²⁾

13.3	11.2	6.3	8.6	6.9	12.3	13.4	10.1	I didn't know such devices or systems exist
73.2	72.6	83.6	80.9	75.9	70.7	71.7	76.0	I had no need to use those connected devices/systems
8.8	6.4	5.8	8.0	5.9	0.3	6.3	6.6	Costs too high
5.3	5.7	6.9	5.3	6.2	6.3	6.5	6.0	Lack of compatibility with other devices or systems
0.8	2.9	2.0	1.2	1.3	0.0	4.2	2.3	Lack of skills to use those devices or systems
0.3	0.3	0.8	0.5	0.1	0.0	0.6	0.4	Concerns about privacy and protection of data about me generated by those devices or systems
0.3	0.3	0.8	0.5	0.1	0.0	0.6	0.4	Concerns about security e.g. that the device or system will be hacked)
0.6	0.9	1.2	0.4	1.5	0.0	1.3	1.0	Concerns about security or health (e.g. that the use of the device or system could lead to an accident, injury or health problems)
1.6	7.3	1.8	3.4	8.0	10.6	3.3	4.8	Other reasons

MODULE G: Internet of smart devices

Response (individuals)	Age						Sex	
	16–24	25–34	35–44	45–54	55–64	65–74	Men	Women
G3: Have you used the Internet on any of the following devices								
An Internet-connected TV	54.9	54.6	50.6	48.2	43.8	30.3	42.4	48.0
An Internet-connected game console	11.7	4.1	11.5	5.4	3.4	0.9	6.7	4.8
An Internet-connected audio system smart speakers	11.9	3.5	11.8	7.4	5.4	2.5	7.2	6.4
Never used the Internet on the mentioned devices	40.1	45.2	45.7	50.6	54.1	69.7	54.6	51.0
G4: : Have you used any of the following Internet-connected								
A smart watch, a fitness band, connected googles or headset, safety trackers, Internet-connected accessories, Internet-connected clothes or shoes	14.4	10.4	10.6	3.8	2.1	1.0	6.5	5.7
Internet-connected devices for monitoring blood pressure, sugar level, body weight (e.g. smart scales) or other Internet-connected devices for health and medical care	0.0	0.9	2.2	2.7	0.8	0.3	1.2	1.2
Internet-connected toys, such as robot toys (including educational tools) or dolls	0.0	0.1	0.0	0.2	0.0	0.0	0.1	0.0
A car with built-in wireless Internet connection	0.7	0.1	0.4	0.8	1.9	0.0	0.6	0.8
Haven't use the above mentioned Internet-connected devices	85.4	89.5	88.5	93.1	95.4	98.8	92.4	92.8

Data refer to individuals who did not said "More than a year ago" or "Never used it" in question B1.

Educational level			Employment status				Total	Response (individuals)
Lower than secondary	Secondary	Tertiary	Employee	Unemployed	Student	Other		

in your home for private purposes?

37.6	45.6	49.7	53.1	43.8	62.4	37.6	45.6	An Internet-connected TV
8.4	5.0	5.5	7.4	6.2	5.5	3.4	5.6	An Internet-connected game console
5.7	6.5	7.7	8.3	7.1	5.3	5.0	6.7	An Internet-connected audio system smart speakers
59.1	53.1	48.3	44.8	54.1	37.6	60.8	52.5	Never used the Internet on the mentioned devices

devices for private purposes?

5.1	5.7	7.0	6.9	6.3	17.7	3.8	6.0	A smart watch, a fitness band, connected googles or headset, safety trackers, Internet-connected accessories, Internet-connected clothes or shoes
1.5	0.9	1.8	1.6	1.2	0.0	1.0	1.2	Internet-connected devices for monitoring blood pressure, sugar level, body weight (e.g. smart scales) or other Internet-connected devices for health and medical care
0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.0	Internet-connected toys, such as robot toys (including educational tools) or dolls
0.4	0.5	1.2	1.0	0.4	0.6	0.5	0.7	A car with built-in wireless Internet connection
93.1	93.4	91.1	91.4	92.7	81.7	94.8	92.6	Haven't use the above mentioned Internet-connected devices

QUESTIONNAIRE





The data in this questionnaire are confidential and shall be used for statistical purposes only
(Law on Official Statistics, „Official Gazette of the RS“, number on 104/09)

USAGE OF INFORMATION AND COMMUNICATION TECHNOLOGIES IN HOUSEHOLDS AND BY INDIVIDUALS

MODULE A: ACCESS TO INFORMATION AND COMMUNICATION TECHNOLOGIES

A1_N Do you or anyone in your household have access to the following devices at home?

(tick all that apply)

a) Desktop computer

b) Laptop (notebook)

c) Tablet

d) TV

d1) Satellite TV

d2) Cable TV

d3) Digital TV

d4) IPTV

e) Radio-receiver (including mobile phone, car radio...)

e1) Radio-receiver at home

e2) Car radio

e3) Mobile phone

e4) Computer

f) Mobile phone

g) None of the above

→ Go to A1

A1 Do you or anyone in your household have access to the Internet at home? (on any device)

(tick only one)

a) Yes

→ Go to A2

b) No

→ Go to A3

c) Don't know

→ Go to B1_N

A2 What type of Internet connection do you use at home?

(tick all that apply)

a) Broadband connection – ADSL (DSL)

b) Broadband connection – cable Internet

c) Mobile broadband connection (3G network) via a device

d) Mobile broadband connection (3G network) via a card (integrated in the computer) or USB modem

e) Dial-up access over telephone line or ISDN

f) Mobile narrowband connection (2G or GPRS), using SIM cards or USB key

→ Go to B1_N

A3	What are the reasons for not having access to the Internet at home?	
(tick all that apply)		
a) Have access to the Internet elsewhere		
b) Don't need the Internet		
c) Equipment costs too high		
d) Access costs too high (Internet subscription, telephone)		
e) Lack of skills		
f) Privacy or security concerns		
g) Broadband Internet is not available		
h) None of the above; other reasons		
-> Go to B1_N		
MODULE B_N: USE OF COMPUTERS		
B1_N	When did you last use a computer (at home, at work or at any other place)? (desktop, laptop, notebook, tablet, excluding smartphone)	
(tick only one)		
a) Within the last three months		→ Go to B2_N
b) More than three months ago (less than a year)		→ Go to B1
c) More than a year ago		→ Go to B1
d) Never used it		→ Go to B1
B2_N	How often, on average, have you used a computer in the last three months?	
(tick only one)		
a) Every day or almost every day		
b) At least once a week		
c) At least once a month		
d) Less than once a month		
-> Go to B1		
MODULE B: USE OF THE INTERNET		
B1	When did you last use the Internet? (using desktop, laptop, mobile phone, smartphone)	
(могуће је дати само један одговор)		
a) Every day or almost every day		→ Go to B2
b) At least once a week		→ Go to C1
c) At least once a month		→ Go to H1
d) Less than once a month		→ Go to H1
B2	How often, on average, did you use the Internet in the last 3 months?	
(tick only one)		
a) Every day or almost every day		→ Go to B2.1
b) At least once a week		→ Go to B3
c) At least once a month		→ Go to B3
d) Less than once a month		→ Go to B3

B2.1	Do you use the Internet several times during the day?	
(tick only one)		
a) Yes	<input type="checkbox"/>	<input type="checkbox"/>
b) No	<input type="checkbox"/>	<input type="checkbox"/>
-> Go to B3		
B3	Which of the following activities have you performed over the Internet (including via an application) for private purposes, in the last 3 months?	
(tick all that apply)		
Communication		
a) Sending/receiving e-mails	<input type="checkbox"/>	<input type="checkbox"/>
b) Telephoning over the Internet/video calls (via webcam) (using applications, such as <i>Skype</i> and <i>FaceTime</i>)	<input type="checkbox"/>	<input type="checkbox"/>
c) Participating in social networks (creating user profile, posting messages or other contributions to Facebook, Twitter, Instagram, Snapchat, etc.)	<input type="checkbox"/>	<input type="checkbox"/>
d) Sending online messages via <i>WhatsApp</i> , <i>Viber</i> , <i>Skype</i> , <i>Messenger</i>	<input type="checkbox"/>	<input type="checkbox"/>
Access to information		
e) Finding information about goods and services	<input type="checkbox"/>	<input type="checkbox"/>
f) Reading online newspapers/magazines	<input type="checkbox"/>	<input type="checkbox"/>
Creativity		
g) Uploading self-created content (text, photos, music, videos, software, etc.)	<input type="checkbox"/>	<input type="checkbox"/>
Use of the Internet for entertainment		
h) Listening to music (web radio, music streaming)	<input type="checkbox"/>	<input type="checkbox"/>
i) Watching Internet streamed TV (live or catch-up) from TV broadcasters	<input type="checkbox"/>	<input type="checkbox"/>
j) Watching video on demand from commercial services (such as <i>Netflix</i> , <i>HBO GO</i> , <i>Amazon Prime</i> , <i>Maxdome</i>)	<input type="checkbox"/>	<input type="checkbox"/>
k) Watching video content from sharing services (such as YouTube)	<input type="checkbox"/>	<input type="checkbox"/>
l) Playing or downloading games	<input type="checkbox"/>	<input type="checkbox"/>
Health		
m) Seeking health-related information (such as injuries, diseases, nutrition, improving health, etc.)	<input type="checkbox"/>	<input type="checkbox"/>
n) Making an appointment with a practitioner via websites of hospitals or health care centres	<input type="checkbox"/>	<input type="checkbox"/>
o) Accessing health records online	<input type="checkbox"/>	<input type="checkbox"/>
p) Using other health care services via a website or application instead of having to go to the hospital or a doctor (e.g. by getting a prescription or consultation online)	<input type="checkbox"/>	<input type="checkbox"/>
Other online services		
r) Selling of goods or services via a website or application (such as <i>eBay</i> , <i>Facebook Marketplace</i> , <i>shpock</i>)	<input type="checkbox"/>	<input type="checkbox"/>
s) Internet banking via a website or application	<input type="checkbox"/>	<input type="checkbox"/>
-> Go to B4		
B4	Have you used cloud services for storage of files (documents, pictures, music or video files) for private purposes in the last 3 months? (such as <i>Google drive</i> , <i>Dropbox</i> , <i>Windows OneDrive</i> , <i>eCloud</i> , <i>Amazon Cloud Drive</i>)	
(tick only once)		
a) Yes	<input type="checkbox"/>	<input type="checkbox"/>
b) No	<input type="checkbox"/>	<input type="checkbox"/>
-> Go to B5		

B5	Which of the following learning activities have you carried out over the Internet for educational, private or professional purposes in the last 3 months?	
(for persons who answered „Yes“ in question B1 under a)		
(tick all that apply)		
a) Doing an online course	<input type="checkbox"/>	<input type="checkbox"/>
b) Finding online learning materials (audio-visual materials, online learning software, electronic textbooks...)	<input type="checkbox"/>	<input type="checkbox"/>
c) Communication with instructors or students using websites or portals	<input type="checkbox"/>	<input type="checkbox"/>
d) Never carried out learning activities over the Internet	<input type="checkbox"/>	<input type="checkbox"/>
-> Go to C1		

MODULE C: USE OF E-GOVERNMENT

C1	In the last 12 months, have you used public authorities's or public services over the Internet, for private purposes, for the following activities?	
(tick all that apply)		
a) Obtaining information from websites or applications	<input type="checkbox"/>	<input type="checkbox"/>
b) Downloading/printing official forms	<input type="checkbox"/>	<input type="checkbox"/>
c) Sending completed forms	<input type="checkbox"/>	<input type="checkbox"/>
d) Haven't use public authorities' services	<input type="checkbox"/>	<input type="checkbox"/>
If the answer is „No“ in C1c) -> go to C2; otherwise go to D1		
C2	What are the reasons for not submitting completed forms to public authorities over the Internet for private purposes, in the last 12 months ?	
(tick all that apply)		
a) No need to submit completed forms (whether online or in hard copies)	<input type="checkbox"/>	<input type="checkbox"/>
If the answer is „Yes“ under a) -> go to question D1; otherwise go to b-f in question C2		
b) There were no such online services available (did not exist)	<input type="checkbox"/>	<input type="checkbox"/>
c) Lack of skills (don't know how to use website or use is too complicated)	<input type="checkbox"/>	<input type="checkbox"/>
d) Concerns about security of protection of personal data	<input type="checkbox"/>	<input type="checkbox"/>
e) Another person did it on my behalf	<input type="checkbox"/>	<input type="checkbox"/>
f) Other reasons	<input type="checkbox"/>	<input type="checkbox"/>
-> Go to D1		

MODULE D: E-COMMERCE

D1	When did you last buy or order goods or services over the Internet for private purposes? (via website or applications on any device: desktop computer, laptop, mobile phone, smartphone)	
(for persons who have used the Internet in the last 12 months – who answered „Yes“ in question B1a or B1b)		
(tick only one)		
a) In the last three months	<input type="checkbox"/>	→ Go to D2
b) More than three months ago (less than a year)	<input type="checkbox"/>	→ Go to E1
c) More than a year ago	<input type="checkbox"/>	→ Go to E1
d) Never	<input type="checkbox"/>	→ Go to E1

D2	What types of goods have you bought over the Internet or applications in the last 3 months for private purposes? Including online purchases from enterprises or private persons and including used goods.	
(tick all that apply)		
a) Clothes (including sport clothing), shoes or accessories (such as bags, jewellery)		
b) Sport goods (excluding sport clothing)		
c) Children toys or children items (nappies, bottles, baby strollers)		
d) Furniture, home accessories (such as carpets or curtains) or gardening products (tools, plants)		
e) Music as Cds, vinyls, etc.		
f) Films or series as DVDs, Blu-ray		
g) Printed books, magazines or newspapers		
h) Computers, tablets, mobile phones or accessories		
i) Consumer electronics (such as TV sets, stereos, cameras) or household appliances (such as washing machines)		
j) Medicines or dietary supplements such as vitamins (online renewal of prescriptions not included)		
k) Deliveries from restaurants, fast food chains, catering services		
l) Food or beverages from stores or from meal-kits providers		
m) Cosmetics, beauty or wellness products		
n) Cleaning products or personal hygiene products (such as toothbrushes, handkerchiefs, washing detergents, cleaning cloths)		
o) Bicycles, mopeds, cars or other vehicles or their spare parts		
p) Other physical goods		
-> Go to D3		
D3	From whom have you bought the mentioned goods via website or application for private purposes in the last 3 months? Including online purchases from enterprises or private persons.	
(Tick all that apply)		
a) National sellers		
b) Sellers from EU countries		
c) Sellers from the rest of the world		
d) Country of origin of seller unknown		
-> Go to D4		
D4	Did you buy any of the mentioned goods from private persons via website or application (via ebay-a, Facebook Marketplace)?	
(tick only one)		
a) Yes		
b) No		
-> Go to D5		

D5	Did you buy or subscribe to any of the following via a website or application for personal purposes in the last 3 months?
(tick all that apply)	
a) Music as a streaming service or downloads	
b) Films or series as a streaming service or downloads	
c) e-books, online magazines or online newspapers	
d) Games online or as downloads for smartphones, tablets, computers or consoles	
e) Computer or other software as downloads and upgrades	
f) Applications related to health or fitness (excluding free applications)	
g) Other applications (related to learning languages, travelling, weather), excluding free applications	
h) Did not buy or subscribe to any of the above	
-> Go to D6	
D6	Did you buy or subscribe to any of the following via a website or applications for personal purposes in the last 3 months?
(tick all that apply)	
a) Tickets for sports events	
b) Tickets for cultural or other events (cinema, concerts, fairs)	
c) Subscriptions to the Internet or mobile phone connection	
d) Subscription to electricity, water or heating supply, waste disposal or similar services	
e) Household services (such as cleaning, babysitting, repair works, gardening) also when bought from private persons, via e.g. Facebook Marketplace	
f) Did not buy or subscribe to any of the above	
-> Go to D7	
D7	Did you buy any of the mentioned household services from private persons via website or application (e.g. via Facebook Marketplace)?
(tick only one)	
a) Yes	
b) No	
-> Go to D8	
D8	Did you buy any transport service via website or application for personal purposes in the last 3 months from:
(tick all that apply)	
a) A transport enterprise such as local bus, flight ticket, taxi ride (e.g. UBER)	
b) Private person	
c) Did not buy any transport service	
-> Go to D9	
D9	Did you rent accommodation via website or application for personal purposes in the last 3 months from:
(tick all that apply)	
a) An enterprise such as hotels or travel agencies	
b) A private person (such as Airbnb)	
c) Did not rent any accommodation via website or application	
-> Go to D11	

D11	How many times have you bought goods or services over the Internet for private purposes in the last 3 months?	
For persons who answered „In the last three months“ in question D1		
(tick only one)		
a) 1–2 times	<input type="checkbox"/>	<input type="checkbox"/>
b) 3–5 times	<input type="checkbox"/>	<input type="checkbox"/>
c) 6–10 times	<input type="checkbox"/>	<input type="checkbox"/>
d) More than 10 times	<input type="checkbox"/>	<input type="checkbox"/>
-> Go to D12		
D12	How much money have you spent on your purchases of goods via website or application for personal purposes in the last 3 months?	
For persons who answered: „In the last three months“ in question D1		
(tick only one)		
a) Less than 50 euros	<input type="checkbox"/>	<input type="checkbox"/>
b) From 50 to 100 euros	<input type="checkbox"/>	<input type="checkbox"/>
c) From 100 to 300 euros	<input type="checkbox"/>	<input type="checkbox"/>
d) From 300 to 500 euros	<input type="checkbox"/>	<input type="checkbox"/>
e) From 500 to 700 euros	<input type="checkbox"/>	<input type="checkbox"/>
f) From 700 to 1000 euros	<input type="checkbox"/>	<input type="checkbox"/>
g) More than 1000 euros	<input type="checkbox"/>	<input type="checkbox"/>
h) Don't know	<input type="checkbox"/>	<input type="checkbox"/>
-> Go to D13		
D13	Have you carried out any of the following activities via website or application for private purposes in the last 3 months?	
For persons who answered: „In the last three months“ in question B1		
(tick all that apply)		
a) Buy insurance policies, including travel insurance, also as a package with another service, e.g. with plane ticket	<input type="checkbox"/>	<input type="checkbox"/>
b) Take a loan, mortgage or credit from banks or other financial institutions	<input type="checkbox"/>	<input type="checkbox"/>
c) Buy or sell shares, bonds, units in funds or other financial assets	<input type="checkbox"/>	<input type="checkbox"/>
d) Haven't carried out any of the mentioned activities	<input type="checkbox"/>	<input type="checkbox"/>
-> Go to D1		

MODULE E: PRIVACY AND PROTECTION OF PERSONAL DATA

E1	Have you carried out any of the following to manage access to your personal data (e.g. name, date of birth, identity card number, contact details, credit card number, photos, geographical location) over the Internet in the last 3 months?	
(for persons who have used the Internet in the last 3 months – who answered „Yes“ in question B1a)		
(tick all that apply)		
a) Read privacy policy statements before providing personal data	<input type="checkbox"/>	<input type="checkbox"/>
b) Restricted or refused access to your geographical location	<input type="checkbox"/>	<input type="checkbox"/>
c) Limited access to profile or content on social networking sites or shared online storage	<input type="checkbox"/>	<input type="checkbox"/>
d) Refused allowing the use of personal data for advertising purposes	<input type="checkbox"/>	<input type="checkbox"/>
e) Checked that the website where you provided personal data was secure (e.g. https websites, safety logo or certificate)	<input type="checkbox"/>	<input type="checkbox"/>
f) Haven't carried out any of the above mentioned	<input type="checkbox"/>	<input type="checkbox"/>

-> Go to E2		
E2	Did you know that cookies can be used to trace movements of people on the Internet, to make a profile of each user and service them tailored adds?	
(tick only one)		
a) Yes		
b) No		
-> Go to E3		
E3	Have you changed the settings in your Internet browser to prevent or limit cookies on any of your devices?	
(tick only once)		
a) Yes		
b) No		
-> Go to E5		
E5	Do you use software that limits the ability to track your activities on the Internet on any of your devices?	
(tick only one)		
a) Yes		
b) No		
-> Go to F1		
MODULE F: TRUST, SECURITY AND PRIVACY		
F1	Have you use the following identification procedures for accessing online services via website or applications (via e-mail, social media accounts, internet banking, public services, ordering or buying goods or services over the Internet) for private purposes in the last 3 months?	
(for persons who have used the Internet in the last 3 months – who answered „Yes“ in question B1a)		
(tick all that apply)		
a) Simple login with username and password	<input type="checkbox"/>	
b) Social media login for other services	<input type="checkbox"/>	
c) A security token	<input type="checkbox"/>	
d) Electronic identification certificate or card used for example with a card reader or with an application	<input type="checkbox"/>	
e) Procedure involving the use of mobile phone (via a code received via a message)	<input type="checkbox"/>	
f) Single use pin code list (plastic card with codes, scratch codes, etc.) or random characters of a password	<input type="checkbox"/>	
g) Other electronic identification procedure	<input type="checkbox"/>	
h) Haven't used any electronic identification procedure	<input type="checkbox"/>	
-> Go to F2		
TRUST, SECURITY AND PRIVACY IN THE CONTEXT OF SMARTPHONES		
F2	Do you use a smartphone for personal purposes?	
(tick only one)		
a) Yes	<input type="checkbox"/>	-> Go to F3
b) No	<input type="checkbox"/>	-> Go to G1

F3	Does your smartphone have any kind of security software or services such as antivirus, antispam or firewall?
(tick all that apply)	
a) Yes, automatically installed or provided with the operating system	
b) Yes, I installed it or subscribed to it or somebody else did it	
c) No	
d) Don't know	
-> Go to F4	
F4	Have you ever lost information, documents, pictures or other kind of data on your smartphone as a result of a virus or other hostile type of program?
(tick only one)	
a) Yes	
b) No	
c) Don't know	
-> Go to F5	
F5	When using or installing an application on your smartphone, have you restricted or refused access to your personal data (e.g. your location, contact list)
(tick only one)	
a) Yes	
b) No	
c) Didn't know it was possible	
d) Not applicable (don't use applications)	
-> Go to G1	
MODULE G: INTERNET OF SMART DEVICES	

G1	Have you used any of the following Internet-connected devices or systems for personal purposes ?	
(tick all that apply)		
a) Internet-connected thermostat, lights, plug-ins or other Internet-connected solutions for energy management for your home		-> Go to G3
b) Internet-connected home alarm system, smoke detector, security cameras, door locks or other Internet-connected security/safety solutions for your home		-> Go to G3
c) Internet-connected home appliances such as robot vacuums, fridges, ovens, coffee machines		-> Go to G3
d) Virtual assistant in the form of a smart speaker or of an application, such as Google Home, Amazon Alexa/Echo/Computer, Google Assistant, Siri, Cortana, Bixby		-> Go to G3
e) Haven't used any of the above mentioned		-> Go to G2
G2	What were the reasons for not having used any of the mentioned Internet-connected devices or systems for private purposes?	
(for persons who answered „Yes“ in question G1e)		
(tick all that apply)		

a) I didn't know such devices or systems exist			-> „Yes“ to G2a) go to G3; -> „No“ to G2a) go to G2 b)-i)
b) I had no need to use those connected devices/systems			
c) Costs too high			
d) Lack of compatibility with other devices or systems			
e) Lack of skills to use those devices or systems			
f) Concerns about privacy and protection of data about me generated by those devices or systems			
g) Concerns about security (e.g. that the device or system will be hacked)			
h) Concerns about security or health (e.g. that the use of the device or system could lead to an accident, injury or health problems)			
i) Other injuries			
-> Go to G3			
G3	Have you used the Internet on any of the following devices in your home for personal purposes?		
(tick all that apply)			
a) An Internet-connected TV			
b) An Internet-connected game console			
c) An Internet-connected home audio system, smart speakers			
d) Never used the Internet on the mentioned devices			
Go to G4			
G4	Have you used any of the following Internet-connected devices for personal purposes?		
(tick all that apply)			
a) A smart watch, a fitness band, connected goggles or headsets, safety-trackers, Internet-connected accessories, Internet-connected clothes or shoes			
b) Internet-connected devices for monitoring blood pressure, sugar level, body weight (e.g. smart scales) or other Internet-connected devices for health and medical care			
c) Internet-connected toys, such as robot toys (including educational) or dolls			
d) A car with built-in wireless Internet connection			
e) Haven't used the above mentioned devices over the Internet			
-> Go to H1			
MODULE H: RESPONDENT'S SOCIO-DEMOGRAPHIC BACKGROUND INFORMATION			
H1	Age		
H2	Sex		
a) Man			
b) Woman			
-> Go to H3			
H3	Country of birth		
(tick only one)			
a) Serbia			
b) EU countries			
c) Other countries of the rest of the world			
-> Go to H4			

H4	Citizenship		
(tick only one)			
a) Serbian			
b) EU countries			
c) Countries of the rest of the world			
-> Go to H5			
H5	Educational level		
(tick only one)			
(tick only one)			
a) Without education			
b) 1–4 grades of primary school			
c) 5–8 grades of primary school			
d) Secondary vocational school, grammar school			
e) Specialization after secondary school, school for highly qualified workers			
f) High school			
g) Faculty / higher school / academy			
h) Master degree			
-> Go to H6			
H6	Employment situation?		
(tick only one)			
a) Employee or self-employed			→ Go to H6a
a1) Employee			
a2) Self-employed			
b) Unemployed			→ Go to H12
c) Student			→ Go to H12
d) Other not included in the labor force			→ Go to H12
d1) Retired person			
d2) Disability (permanently disabled for work)			
d3) Persons in compulsory military service			
d4) Housewife			
d5) Other			
H6a	Types of employment contract? (this question is for persons who answered „Employee“ in question H6)		
(tick only one)			
a) Contract of unlimited duration			
b) Contract of limited duration			
-> Go to H6b			
H6b	Working hours? (this question is for persons who answered „Employee or self-employed“ in question H6)		
(tick only one)			
a) Full-time			
b) Part-time			
-> Go to H6c			
H6c	Economic sector?		


(tick only one)		
a) Agriculture, forestry, fishing	<input type="checkbox"/>	<input type="checkbox"/>
b) Mining and quarrying, manufacturing	<input type="checkbox"/>	<input type="checkbox"/>
c) Construction	<input type="checkbox"/>	<input type="checkbox"/>
d) Wholesale and retail trade, transport, accommodation and food service activities	<input type="checkbox"/>	<input type="checkbox"/>
e) Information and communications	<input type="checkbox"/>	<input type="checkbox"/>
f) Financial and insurance activities	<input type="checkbox"/>	<input type="checkbox"/>
g) Real estate activities	<input type="checkbox"/>	<input type="checkbox"/>
h) Professional, scientific, innovation and technical activities	<input type="checkbox"/>	<input type="checkbox"/>
i) Public administration and defense, compulsory social work activities, education, health	<input type="checkbox"/>	<input type="checkbox"/>
j) Other service activities	<input type="checkbox"/>	<input type="checkbox"/>
-> Go to H7		

H7	Occupation?	
(tick only one)		
a) ICT specialists	<input type="checkbox"/>	<input type="checkbox"/>
b) Managers, specialists, administrative staff and other	<input type="checkbox"/>	<input type="checkbox"/>
c) Farmers, craftsmen and similar occupations	<input type="checkbox"/>	<input type="checkbox"/>
-> Go to H12		
H12	Number of household members	→ Go to H13
H13	Of which, number of children aged under 18	→ Go to H14
H14	Household income (average net monthly income)	
(tick only one)		
a) Up to 300 euros	<input type="checkbox"/>	<input type="checkbox"/>
b) From 300 to 600 euros	<input type="checkbox"/>	<input type="checkbox"/>
c) More than 600 euros	<input type="checkbox"/>	<input type="checkbox"/>

ENTERPRISES



2.1. Methodology

Survey period	<ul style="list-style-type: none"> The survey was carried out from 16 March to 31 March 2020.
Type of survey	<ul style="list-style-type: none"> Telephone interview 
Sample size	<ul style="list-style-type: none"> 1 571 enterprises
Target population ¹⁾	<ul style="list-style-type: none"> Enterprises with 10 or more employees Section C: Manufacturing Sections D and E: Electricity, gas, steam and air conditioning supply; Water supply, sewerage Section F: Construction Section G: Wholesale and retail trade; repair of motor vehicles and motorcycles Section H: Transportation, storage and communications Section I: Accommodation and food service activities Section J: Information and communications Sections L and M: Real estate activities; Professional, scientific and technical activities Section N and division 95: Administrative and support service activities; Repair of computers Banks and insurance companies
Type of sample	<ul style="list-style-type: none"> Stratified sample
Geographic scope	<ul style="list-style-type: none"> Territory of the Republic of Serbia (without AP Kosovo and Metohija)

¹⁾ Since 2011, the Classification of Activities has been in use according to the Regulation on the Classification of Activities ("Official Gazette of the RS" number 54/2010). This classification is harmonized with NACE rev.2.

2.2. Sample

The survey on ICT usage in enterprises was carried out on a representative sample of 1571 enterprises in the territory of the Republic of Serbia. The response rate is 80.6% (1270 enterprises).

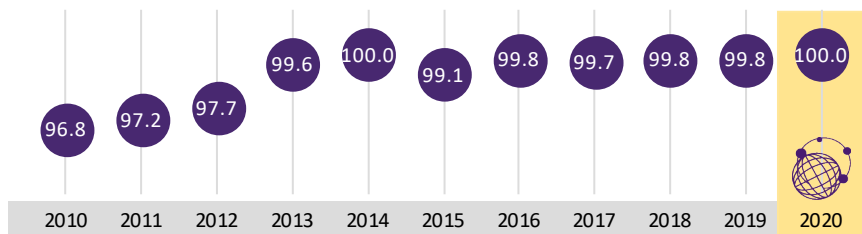
Sample (enterprises)		Size class			Region				Total
		Small (10–49)	Medium (50–249)	Large (250+)	Beogradski	Vojvodina	Šumadija i Zapadna Srbija	Južna i Istočna Srbija	
Activity	Manufacturing	210	167	133	120	122	155	113	510
	Electricity, gas, steam and air conditioning supply; Water supply and sewerage	21	19	15	9	15	14	17	55
	Construction	30	26	19	20	18	20	17	75
	Wholesale and retail trade	86	57	27	39	43	44	44	170
	Transportation and storage	28	16	19	20	19	12	12	63
	Accommodation and food service activities	63	42	2	46	27	16	18	107
	Information and communications	46	34	7	36	21	9	21	87
	Real estate activities; Professional, scientific and technical activities	55	39	14	56	25	11	16	108
	Administrative and support support activities; Repair of computers	44	24	27	49	21	12	13	95
Number		583	424	263	395	311	293	271	1270
Percentage		45,9	33.4	20.7	31.1	24.5	23.1	21.3	100.0

2.3. Main findings

2.3.1. Internet in enterprises

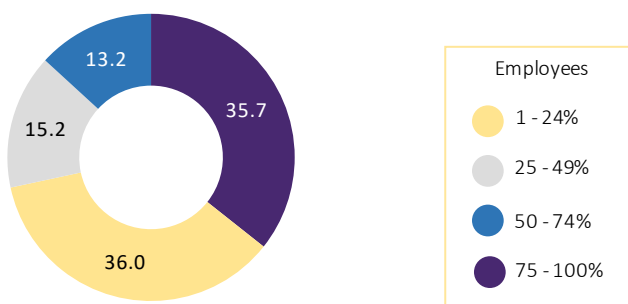
In the Republic of Serbia 100% of enterprises have an Internet connection.

Chart 2.1. Does your enterprise have access to the Internet? (%)



In 36.0% of enterprises having from 1% to 24% of employees use the Internet, while in 35.7% of enterprises having from 75% to 100% of employees use the Internet.

Chart 2.2. Enterprises by the percentage of employees using the Internet (%)



As regard the type of connection, enterprises were given the possibility to choose several answers among the proposed ones.

The results indicate that of the total number of enterprises having an Internet connection, 98.4% have a broadband Internet connection.

Chart 2.3. Broadband Internet connection in Enterprises (%)

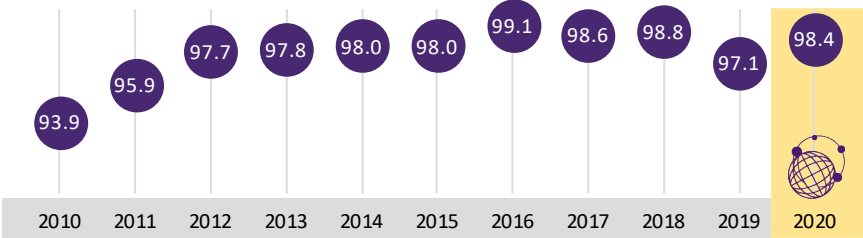
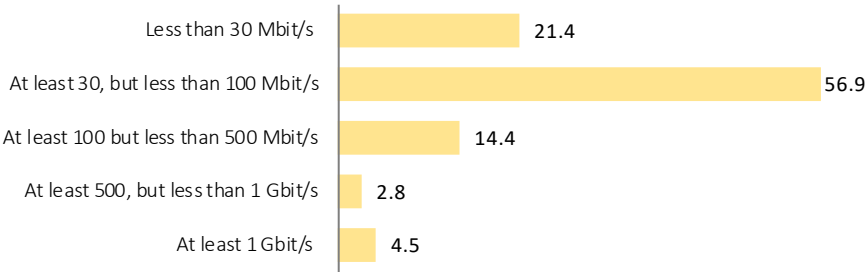
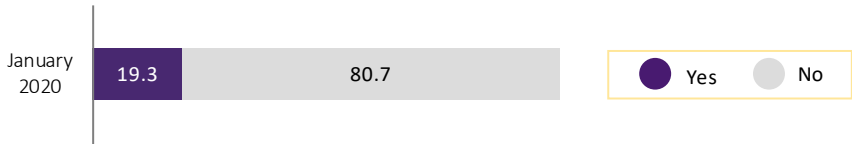


Chart 2.4. What is the maximum contracted speed of the Internet connection in your enterprise? (%)



The survey indicates that 19.3% of enterprises employ ICT specialists. ICT specialists are employed by 69.2% of large enterprises, while this percentage in small enterprises is 12.1%.

Chart 2.5. Does your enterprise employ ICT specialists? (%)



2.3.2. Use of a mobile connection to the Internet for business purposes

In the territory of the Republic of Serbia, 77% of enterprises use a mobile connection to the Internet using portable devices (smart phone, laptop, tablet ...).

Chart 2.6. Does your enterprise provide portable devices that allow a connection to the internet using mobile telephone networks for business purposes? (%)

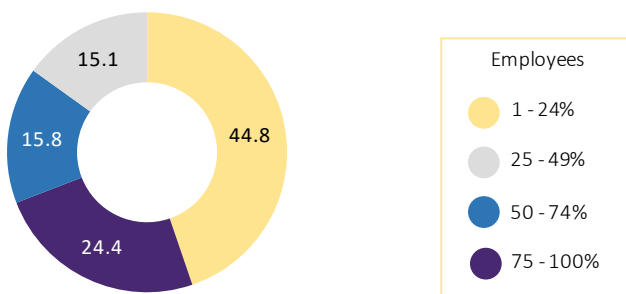


77% of enterprises provide portable devices that allow a connection to the Internet using mobile telephone networks

The analysis of enterprises by size class indicates that 91.1% of large enterprises have a connection to the Internet using portable devices.

In 44.8% of enterprises having from 1% to 24% of employees use portable devices for business purposes, while 24.4% of enterprises having from 75% to 100% of employees use portable devices for business purposes.

Chart 2.7. Enterprises by percentage of employees using portable devices for business purposes? (%)



2.3.3. Website

There are 84.4% of enterprises that have a website, an increase of 0.8% relative to 2019 and an increase of 1.8% relative to 2018.

Looking at the structure of enterprises by size class, the results are as follows:

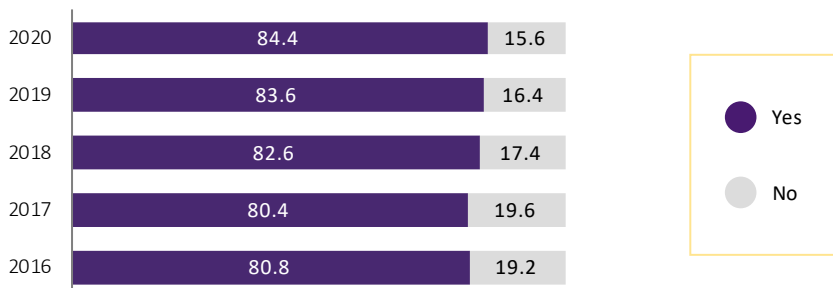
- 95% of large enterprises have a website;
- 89.1% of medium enterprises have a website;
- 82.8% of small enterprises have a website.



84.4% of enterprises have a website

There are also differences by territory. In Belgrade 89.5% of enterprises have a website, in Vojvodina 86.3%, in Region Šumadije i Zapadne Srbije 75.5% and in Region Južne i Istočne Srbije 80.5%.

Chart 2.8. Does enterprise have a website? (%)



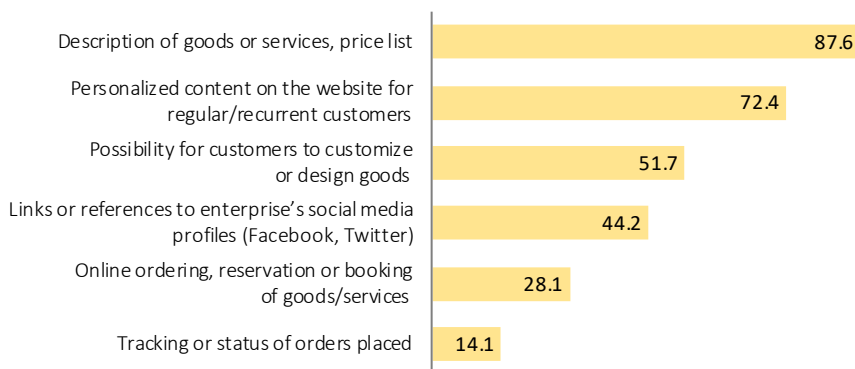
Website available in enterprises, by activity:

- Information and communications (99.1%)
- Administrative and support service activities; Repair of computers (83.6%)
- Real estate activities; Professional, scientific and technical activities (89.3%)
- Manufacturing (84.1%)
- Accommodation and food service activities (82.8%)
- Wholesale and retail trade (87.8%)
- Construction (74.7%)
- Electricity, gas, steam and air conditioning supply; Water supply and sewerage (79.4%)
- Transportation and storage (75.4%)

Enterprises having a website provide mostly the following services:

- Personalized content on the website for regular/recurrent customers (72.4%);
- Description of goods and services, price list (87.6%);
- Possibility for customers to customize or design goods (51.7%).

Chart 2.9. Does the website of your enterprise have any of the following services? (%)



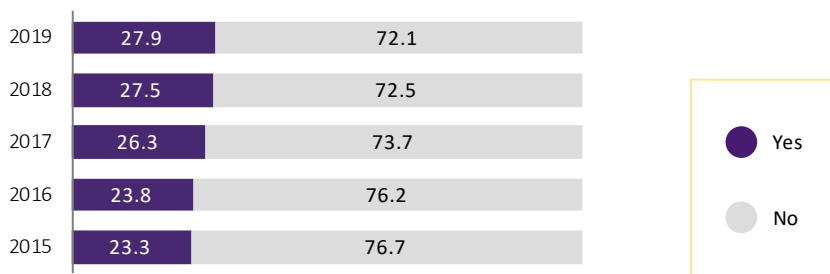
2.3.4. E-commerce

During 2019, 27.9% of enterprises in the Republic of Serbia sold goods/services over the Internet.



27.9% of enterprises sold goods/services over the Internet

Chart 2.10. Did your enterprise sell goods/services over the Internet? (%)



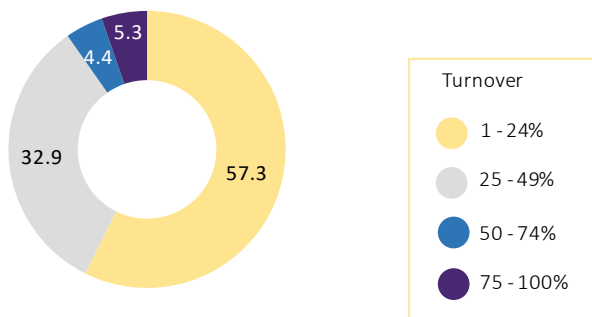
When looking at the structure of enterprises by size class, the results are as follows:

- 14.7% of large enterprises sold goods/services over the Internet;
- 30.2% of medium enterprises sold goods/services over the Internet;
- 28.1% of small enterprises sold goods/services over the Internet.

When asked about the percentage of the total turnover resulting from sale of goods/services over the Internet, enterprises provided the following answers:

- „Less than 24%“ (57.3% of enterprises)
- „More than 24%, and less than 50%“ (32.9% of enterprises)
- „More than 50%, and less than 75%“ (4.4 % of enterprises)
- „75 % and more“ (5.3% of enterprises).

Chart 2.11. Percentage of the total turnover in 2019 resulting from sale of goods/services over the Internet (%)

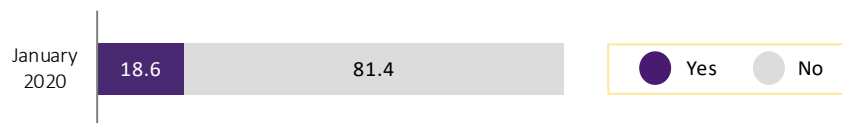


2.3.5. Use of cloud computing services

Cloud computing services imply ICT services accessed over the Internet for the purpose of using software, storage space, etc. The services have the following characteristics:

- they are on servers of providers;
- they may be used on user's demand;
- they are paid based on way of use, capacity.

Chart 2.12 . Does your enterprise pay for cloud computing services over the Internet? (%)



18.6% of enterprises pay for cloud computing services

2.4. Survey results

Module 1.A: Use of the Internet

A1: Percentage of employees using the Internet for business purposes

%

	Enterprises							
	Size class			Region				Total
	Small (10–49)	Medium (50–249)	Large (250+)	Beogradski	Vojvodina	Šumadija i Zapadna Srbija	Južna i Istočna Srbija	
1–24%	37.1	31.3	34.1	29.3	34.7	46.7	40.1	36.0
25–49%	14.4	17.4	19.3	13.4	15.6	15.5	19.3	15.2
50–74%	11.1	20.6	18.3	13.7	10.8	15.6	11.8	13.2
75–100%	37.3	30.6	28.2	43.5	38.9	22.2	28.8	35.7

A2: Does your enterprise use any fixed broadband Internet connection (e.g. ADSL, SDSL, FTTP, cable Internet, public Wi-Fi)?

%

Enterprises		Size class			Region				Total
		Small (10–49)	Medium (50–249)	Large (250+)	Beogradski	Vojvodina	Šumadija i Zapadna Srbija	Južna i Istočna Srbija	
Activity	YES								
	Manufacturing	97.9	97.3	97.4	100.0	95.2	99.5	95.2	97,8
	Electricity, gas, steam and air conditioning supply; Water supply and sewerage	100.0	100.0	94.3	100.0	100.0	100.0	97.5	99,5
	Construction	97.1	90.8	100.0	96.2	100.0	89.9	100.0	96,1
	Wholesale and retail trade	97.9	100.0	100.0	100.0	95.1	100.0	94.8	98,2
	Transportation and storage	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100,0
	Accommodation and food service activities	99.0	100.0	100.0	98.4	100.0	100.0	100.0	99,1
	Information and communications	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100,0
	Real estate activities; Professional, scientific and technical activities	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100,0
	Administrative and support support activities; Repair of computers	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100,0
Total		98,5	98.1	98.4	99.5	97.2	98.8	96.8	98.4

A3: What is the maximum contracted speed of the Internet connection in your enterprise?¹⁾ %

	Enterprises							
	Size class			Region				Total
	Small (10–49)	Medium (50–249)	Large (250+)	Beogradski	Vojvodina	Šumadija i Zapadna Srbija	Južna i Istočna Srbija	
Less than 30 Mbit/s	22.5	17.0	20.6	17.0	26.3	19.5	29.4	21.4
At least 30, but less than 100 Mbit/s	56.1	61.7	50.3	58.1	49.1	62.0	59.3	56.9
At least 100, but less than 500 Mbit/s	13.5	16.5	21.2	16.4	13.8	14.2	9.1	14.4
At least 500, but less than 1 Gbit/s	3.0	1.7	4.0	1.7	5.7	2.7	0.7	2.8
At least 1 Gbit/s	4.9	3.0	4.0	6.7	5.2	1.7	1.5	4.5

A4: Is the speed of the fixed broadband connection sufficient for real needs in your enterprise? %

Enterprises		Size class			Region				Total
		Small (10–49)	Medium (50–249)	Large (250+)	Beogradski	Vojvodina	Šumadija i Zapadna Srbija	Južna i Istočna Srbija	
Activity	Manufacturing	96.2	91.6	96.5	99.0	94.2	91.6	98.1	95,1
	Electricity, gas, steam and air conditioning supply; Water supply and sewerage	68.5	74.1	97.0	100.0	64.4	62.9	84.7	73,3
	Construction	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100,0
	Wholesale and retail trade	87.9	95.9	96.5	80.7	98.2	98.7	86.3	89,1
	Transportation and storage	83.1	94.9	100.0	89.5	100.0	67.7	79.6	85,6
	Accommodation and food service activities	90.8	94.7	100.0	93.0	91.3	89.7	84.3	91,4
	Information and communications	100.0	98.2	92.3	99.7	100.0	100.0	96.6	99,5
	Real estate activities; Professional, scientific and technical activities	90.8	90.8	100.0	98.3	87.1	63.8	74.0	91,0
	Administrative and support support activities; Repair of computers	92.6	88.7	96.4	98.3	79.9	94.7	73.1	92,1
	Total	91,7	92.4	97.1	92.6	94.1	89.6	90.7	92,0

¹⁾ Results refer only to enterprises that said YES in question A2.

A5: Does your enterprise provide portable devices that allow a mobile connection to the Internet using mobile telephone networks for business purposes?

%

Enterprises		Size class			Region				Total
		Small (10–49)	Medium (50–249)	Large (250+)	Beogradski	Vojvodina	Šumadija i Zapadna Srbija	Južna i Istočna Srbija	
YES									
Activity	Manufacturing	81.1	84.2	91.0	82.7	87.7	86.6	63.7	82,4
	Electricity, gas, steam and air conditioning supply; Water supply and sewerage	80.9	100.0	94.3	70.0	92.4	100.0	86.0	90,1
	Construction	74.5	90.8	93.1	49.6	100.0	100.0	91.5	77,8
	Wholesale and retail trade	68.2	94.7	84.6	66.0	86.7	73.4	62.2	72,0
	Transportation and storage	60.5	71.9	94.4	100.0	51.0	44.9	54.3	63,5
	Accommodation and food service activities	46.8	86.3	100.0	55.8	51.9	42.1	52.2	52,5
	Information and communications	81.3	94.9	100.0	80.3	91.3	91.1	89.0	84,2
	Real estate activities; Professional, scientific and technical activities	92.9	93.6	87.1	98.3	85.8	87.9	69.1	92,9
	Administrative and support support activities; Repair of computers	69.8	88.9	93.6	73.5	78.4	97.1	54.1	75,5
Total		73,6	88.6	91.1	74.5	83.2	80.0	67.2	77,0

A6: Percentage of employees using portable devices for business purposes¹⁾

%

	Enterprises							
	Size class			Region				Total
	Small (10–49)	Medium (50–249)	Large (250+)	Beogradski	Vojvodina	Šumadija i Zapadna Srbija	Južna i Istočna Srbija	
1–24%	43.0	49.7	51.0	42.2	35.0	53.8	58.5	44.8
25–49%	14.6	16.2	17.2	18.0	12.8	11.5	18.2	15.1
50–74%	15.9	14.9	17.0	12.9	20.1	15.0	16.8	15.8
75–100%	26.4	19.2	14.8	26.9	32.1	19.7	6.6	24.4

¹⁾ Results refer only to enterprises that said YES in question A5.

A7: Does your enterprise have a website?

%

Enterprises		Size class			Region				Total
		Small (10–49)	Medium (50–249)	Large (250+)	Beogradski	Vojvodina	Šumadija i Zapadna Srbija	Južna i Istočna Srbija	
YES									
Activity	Manufacturing	81.0	90.6	93.4	92.9	86.2	76.6	82.2	84,1
	Electricity, gas, steam and air conditioning supply; Water supply and sewerage	63.0	94.3	100.0	73.6	92.4	77.5	65.0	79,4
	Construction	73.6	75.9	100.0	61.6	86.1	77.6	91.5	74,7
	Wholesale and retail trade	88.3	84.4	88.1	100.0	85.2	66.0	84.5	87,8
	Transportation and storage	69.5	100.0	100.0	79.1	77.0	78.5	57.4	75,4
	Accommodation and food service activities	81.3	92.1	100.0	81.2	90.4	79.4	83.0	82,8
	Information and communications	100.0	95.0	100.0	99.1	98.2	100.0	100.0	99,1
	Real estate activities; Professional, scientific and technical activities	87.4	98.7	100.0	89.3	89.2	100.0	72.6	89,3
	Administrative and support support activities; Repair of computers	83.7	77.7	97.9	87.5	91.9	60.2	58.7	83,6
Total		82,8	89.1	95.0	89.5	86.3	75.5	80.5	84.4

**A8: Does the website of your enterprise have any of the following services
(Your enterprise as Internet service provider)?¹⁾**

%

Enterprises		Size class			Region				Total
		Small (10–49)	Medium (50–249)	Large (250+)	Beogradski	Vojvodina	Šumadija i Zapadna Srbija	Južna i Istočna Srbija	
Description of goods or services, price list									
Activity	Manufacturing	84.4	81.2	75.5	73.6	87.3	81.7	93.8	83,0
	Electricity, gas, steam and air conditioning supply; Water supply and sewerage	91.5	96.4	100.0	100.0	91.7	100.0	89.7	94,9
	Construction	93.7	73.8	93.1	93.0	78.3	100.0	88.2	90,2
	Wholesale and retail trade	94.4	93.5	87.0	99.2	97.8	79.3	83.7	94,1
	Transportation and storage	100.0	82.4	87.5	98.4	96.6	92.3	94.6	95,7
	Accommodation and food service activities	92.8	88.8	100.0	98.4	91.6	71.8	90.9	92,2
	Information and communications	81.1	79.6	23.1	87.5	71.5	43.3	72.4	79,6
	Real estate activities; Professional, scientific and technical activities	78.5	58.0	74.3	63.4	100.0	87.9	98.1	75,1
	Administrative and support support activities; Repair of computers	82.1	82.2	100.0	80.3	84.5	100.0	100.0	83,8
Total		89,2	82.6	82.3	86.8	90.5	84.3	89.4	87.6
Online ordering or reservation or booking of goods/services									
Activity	Manufacturing	14.3	13.1	18.8	9.8	13.3	11.9	29.0	14,3
	Electricity, gas, steam and air conditioning supply; Water supply and sewerage	-	25.1	14.9	7.9	22.0	-	24.4	14,1
	Construction	21.2	6.3	12.7	25.7	16.2	-	31.7	18,2
	Wholesale and retail trade	38.8	34.6	36.1	35.9	49.7	29.1	36.2	38,2
	Transportation and storage	28.7	54.5	46.2	42.8	45.0	22.8	13.5	34,9
	Accommodation and food service activities	61.8	68.5		63.7	56.4	65.9	63.6	62,5
	Information and communications	33.6	30.0	15.4	36.8	21.1	31.1	30.0	32,5
	Real estate activities; Professional, scientific and technical activities	29.1	7.9	18.1	21.0	35.9	26.4	38.7	25,4
	Administrative and support support activities; Repair of computers	33.7	16.0	26.0	40.9	7.3	12.9	18.0	29,7
Total		29,6	23.3	23.0	30.8	29.6	18.1	31.6	28.1

¹⁾ Results refer only to enterprises that said YES in question A7.

**A8: Does the website of your enterprise have any of the following services
(Your enterprise as Internet service provider)?¹⁾ (continued)**

%

Enterprises		Size class			Region				Total
		Small (10–49)	Medium (50–249)	Large (250+)	Beogradski	Vojvodina	Šumadija i Zapadna Srbija	Južna i Istočna Srbija	
Possibility for visitors to customize or design goods									
Activity	Manufacturing	46.2	41.3	51.5	42.0	61.3	33.8	43.1	45,3
	Electricity, gas, steam and air conditioning supply; Water supply and sewerage	15.6	54.6	45.1	11.9	19.3	61.5	63.5	38,3
	Construction	53.8	57.4	29.7	64.9	13.4	72.7	63.3	53,5
	Wholesale and retail trade	55.9	34.8	71.0	56.1	21.0	80.6	74.0	53,5
	Transportation and storage	55.1	68.8	75.2	71.3	27.5	78.6	67.1	58,9
	Accommodation and food service activities	74.8	62.5	33.3	86.1	53.2	52.9	70.5	72,6
	Information and communications	64.1	59.7	38.5	72.1	20.1	91.1	71.4	62,8
	Real estate activities; Professional, scientific and technical activities	44.4	40.3	40.9	31.7	58.1	75.8	66.1	43,7
	Administrative and support support activities; Repair of computers	57.0	35.3	54.2	53.7	64.1	21.8	29.3	52,6
Total		53,1	45.9	53.1	54.4	39.6	57.0	59.2	51.7
Tracking or status of orders placed									
Activity	Manufacturing	4.5	6.3	15.8	3.6	5.9	7.3	6.3	5,7
	Electricity, gas, steam and air conditioning supply; Water supply and sewerage	-	3.6	4.6	4.0	-	-	10.3	2,3
	Construction	4.3	-	6.9	0.7	13.4	-	-	3,6
	Wholesale and retail trade	22.3	20.0	27.5	18.9	27.0	17.8	31.3	22,1
	Transportation and storage	28.7	32.4	28.8	40.8	39.2	15.1	5.4	29,5
	Accommodation and food service activities	28.3	25.1	-	25.7	30.0	31.8	26.5	27,6
	Information and communications	8.2	17.3	7.7	11.4	1.1	27.8	3.8	9,8
	Real estate activities; Professional, scientific and technical activities	17.6	0.6	11.7	13.5	23.3	12.1	4.8	14,7
	Administrative and support support activities; Repair of computers	10.1	11.8	10.6	15.6	-	-	10.4	10,5
Total		14,8	11.2	15.8	14.6	16.4	10.7	13.2	14.1

¹⁾ Results refer only to enterprises that said YES in question A7.

**A8: Does the website of your enterprise have any of the following services
(Your enterprise as Internet service provider)?¹⁾ (continued)**

%

Enterprises	Size class			Region				Total
	Small (10–49)	Medium (50–249)	Large (250+)	Beogradski	Vojvodina	Šumadija i Zapadna Srbija	Južna i Istočna Srbija	

Personalised content on the website for regular/recurrent visitors

Activity	Manufacturing	74.0	76.7	72.9	80.7	64.8	92.4	48.1	74,6
	Electricity, gas, steam and air conditioning supply; Water supply and sewerage	80.6	74.9	86.7	24.7	96.1	90.6	59.0	78,5
	Construction	91.7	81.7	88.0	92.5	83.8	100.0	78.9	89,8
	Wholesale and retail trade	56.9	76.8	82.8	31.9	96.6	90.1	65.8	59,9
	Transportation and storage	59.5	80.4	75.2	58.0	63.4	78.6	47.7	64,6
	Accommodation and food service activities	83.3	85.0	100.0	89.9	78.0	68.2	86.4	83,7
	Information and communications	74.0	74.4	69.2	72.9	82.2	51.1	81.7	74,0
	Real estate activities; Professional, scientific and technical activities	82.7	78.8	84.8	81.7	76.0	87.9	97.1	82,1
	Administrative and support support activities; Repair of computers	77.1	74.9	75.8	70.1	85.4	87.1	100.0	76,5
Total		70,8	77.5	77.4	63.1	78.9	89.1	63.1	72.4

Links or references to the enterprise's social media profiles (*Facebook, Twitter*)

Activity	Manufacturing	42.8	43.2	43.5	42.7	33.8	48.4	50.2	42,9
	Electricity, gas, steam and air conditioning supply; Water supply and sewerage	31.1	25.1	37.7	52.3	16.5	24.5	46.8	28,9
	Construction	26.7	44.9	39.0	40.1	3.5	32.2	48.4	30,4
	Wholesale and retail trade	41.1	54.3	86.2	41.1	59.1	24.0	48.3	43,7
	Transportation and storage	12.9	36.9	54.6	19.4	42.1	-	6.8	19,9
	Accommodation and food service activities	80.1	81.1	66.7	87.2	76.6	57.1	86.4	80,2
	Information and communications	72.0	67.0	100.0	71.3	69.7	73.3	76.9	71,7
	Real estate activities; Professional, scientific and technical activities	54.7	23.1	42.1	43.1	52.9	64.5	77.3	49,3
	Administrative and support support activities; Repair of computers	47.3	29.3	50.5	45.2	25.4	91.8	50.5	44,2
Total		43,8	44.2	51.5	46.6	42.1	38.3	50.4	44.2

¹⁾ Results refer only to enterprises that said YES in question A7.

A9: Does your enterprise have a chat service (i.e. service for the exchange of services with the customers)?

%

Enterprises	Size class			Region				Total
	Small (10–49)	Medium (50–249)	Large (250+)	Beogradski	Vojvodina	Šumadija i Zapadna Srbija	Južna i Istočna Srbija	

Chat service – where a person replies to customers

Activity	Manufacturing	7.1	9.7	11.8	6.3	8.0	8.0	10.7	8,0
	Electricity, gas, steam and air conditioning supply; Water supply and sewerage	3.0	11.8	21.0	-	12.0	4.4	13.7	8,3
	Construction	1.5	1.8	6.9	0.5	-	-	10.8	1,7
	Wholesale and retail trade	9.8	12.2	21.8	2.7	22.3	8.3	17.2	10,4
	Transportation and storage	-	9.1	29.0	3.0	5.2	-	-	2,5
	Accommodation and food service activities	24.7	27.9	-	26.8	32.2	15.0	15.7	25,0
	Information and communications	28.3	11.0	15.4	27.1	23.5	36.7	3.8	24,9
	Real estate activities; Professional, scientific and technical activities	10.9	5.5	-	7.7	12.1	24.2	3.5	9,9
	Administrative and support support activities; Repair of computers	22.5	10.2	5.7	24.8	4.2	7.8	25.2	18,7
Total		9,8	10.1	13.8	9.0	12.7	7.7	11.7	10.0

Chatbot – virtual agent replying to customers

Activity	Manufacturing	-	0.4	3.6	0.3	0.2	0.3	0.5	0,3
	Electricity, gas, steam and air conditioning supply; Water supply and sewerage	3.0	-	5.7	-	-	-	9.5	2,0
	Construction	-	-	6.9	0.5	-	-	-	0,2
	Wholesale and retail trade	1.7	8.9	-	1.8	1.2	1.0	10.8	2,6
	Transportation and storage	-	-	2.8	-	0.3	-	-	0,1
	Accommodation and food service activities	6.3	13.1	-	11.4	-	2.3	5.7	7,2
	Information and communications	18.4	8.2	-	21.4	10.8	-	5.5	16,2
	Real estate activities; Professional, scientific and technical activities	-	-	-	-	-	-	-	-
	Administrative and support support activities; Repair of computers	7.5	-	5.7	8.7	2.5	-	-	5,8
Total		2,2	2.8	3.4	3.8	0.9	0.4	3.9	2.3

MODULE B: E-commerce

B1: During 2019, did your enterprise have web sales via:

%

Enterprises	Size class			Region				Total
	Small (10–49)	Medium (50–249)	Large (250+)	Beogradski	Vojvodina	Šumadija i Zapadna Srbija	Južna i istočna Srbija	

Your enterprise website or mobile app

Activity	Manufacturing	16.9	21.4	10.5	16.6	17.0	16.3	22.9	17,6
	Electricity, gas, steam and air conditioning supply; Water supply and sewerage	-	15.2	4.6	2.9	10.2	-	13.3	6,7
	Construction	9.5	4.8	6.9	15.8	2.4	-	10.8	8,6
	Wholesale and retail trade	18.6	41.8	26.3	23.9	16.3	19.2	29.6	21,8
	Transportation and storage	20.0	37.2	38.3	13.2	30.1	34.7	4.7	23,3
	Accommodation and food service activities	46.5	61.6	-	47.2	46.2	55.6	47.2	48,4
	Information and communications	53.9	42.0	15.4	42.8	59.7	80.0	63.1	50,9
	Real estate activities; Professional, scientific and technical activities	13.6	2.4	14.0	6.4	22.0	26.4	14.4	12,0
	Administrative and support support activities; Repair of computers	33.6	49.1	-	41.2	26.7	10.2	31.3	34,2
Total		20,6	27.2	13.3	23.0	20.2	19.2	23.5	21.5

e-commerce marketplace websites or apps used by several enterprises for trading goods or services

Activity	Manufacturing	1.2	1.7	3.0	1.1	0.7	2.1	1.9	1,5
	Electricity, gas, steam and air conditioning supply; Water supply and sewerage	3.0	-	-	-	-	-	7.0	1,5
	Construction	1.5	-	6.9	0.5	-	-	8.5	1,4
	Wholesale and retail trade	12.7	18.9	2.0	19.2	12.7	2.3	11.7	13,3
	Transportation and storage	3.7	4.5	7.9	11.5	2.3	-	-	3,9
	Accommodation and food service activities	21.7	20.5	-	32.1	14.4	-	7.5	21,4
	Information and communications	11.0	9.8	-	9.0	10.8	27.8	6.9	10,6
	Real estate activities; Professional, scientific and technical activities	0.1	-	5.3	-	1.1	-	-	0,2
	Administrative and support support activities; Repair of computers	11.8	-	-	7.5	-	36.9	2.2	8,5
Total		6,9	5.9	3.0	10.2	4.9	2.7	5.6	6.6

B2: What was the percentage of your total web sales in?

%

	Enterprises							
	Size class			Region				Total
	Small (10–49)	Medium (50–249)	Large (250+)	Beogradski	Vojvodina	Šumadija i Zapadna Srbija	Južna i Istočna Srbija	
1–24%	53.4	69.7	78.2	44.1	57.8	79.7	71.1	57.3
25–49%	38.1	15.7	14.2	44.5	26.6	19.8	22.7	32.9
50–74%	4.5	4.0	3.8	3.2	8.9	0.5	5.8	4.4
75–100%	4.0	10.6	3.8	8.2	6.7	0.0	0.3	5.3

B3: What was the percentage of web sales in 2019 for the following?

%

	Enterprises							
	Size class			Region				Total
	Small (10–49)	Medium (50–249)	Large (250+)	Beogradski	Vojvodina	Šumadija i Zapadna Srbija	Južna i Istočna Srbija	

Via your enterprise website or mobile app

1–24%	20.1	7.7	13.1	23.4	17.3	5.7	12.9	17.4
25–49%	1.9	0.0	1.4	1.8	0.1	0.0	4.9	1.5
50–74%	2.4	1.3	2.4	3.4	0.0	2.2	1.9	2.1
75–100%	75.6	91.0	83.2	71.4	82.5	92.2	80.3	79.0

Via e-commerce marketplace websites or apps used by several enterprises

1–24%	75.6	91.0	81.7	71.4	82.5	92.0	80.3	79.0
25–49%	0.7	0.5	1.4	0.6	0.0	2.3	0.0	0.7
50–74%	3.3	0.8	3.8	4.1	0.1	0.0	6.7	2.8
75–100%	20.3	7.7	13.1	23.8	17.3	5.7	12.9	17.6

¹⁾ Results refer only to enterprises that said YES in question B1.

B6: What was the percentage of the value of web sales in 2019, by type of transaction?

%

	Enterprises							
	Size class			Region				Total
	Small (10–49)	Medium (50–249)	Large (250+)	Beogradski	Vojvodina	Šumadija i Zapadna Srbija	Južna i Istočna Srbija	
Sale to final consumers (B2C)								
1–24%	21.6	12.9	16.6	25.0	9.9	12.8	28.9	19.7
25–49%	10.7	2.0	0.0	18.3	0.6	1.0	0.9	8.7
50–74%	12.7	12.6	16.2	10.2	17.9	13.0	12.0	12.8
75–100%	54.9	72.5	67.2	46.5	71.5	73.3	58.2	58.9
Sale to enterprises (B2B, B2G)								
1–24%	54.9	72.5	67.2	46.5	71.5	73.3	58.2	58.9
25–49%	3.8	4.0	1.4	2.3	3.4	5.7	6.8	3.8
50–74%	19.7	10.6	14.8	26.2	15.1	8.3	6.1	17.7
75–100%	21.6	12.9	16.6	25.0	9.9	12.8	28.9	19.7

B7: During 2019, did your enterprise receive orders placed via EDI-type messages for sale of goods or services?

%

Enterprises	Size class			Region				Total
	Small (10–49)	Medium (50–249)	Large (250+)	Beogradski	Vojvodina	Šumadija i Zapadna Srbija	Južna i Istočna Srbija	

YES

Activity	Manufacturing	0.9	2.7	7.8	2.8	1.3	1.8	0.5	1,7
	Electricity, gas, steam and air conditioning supply; Water supply and sewerage	-	-	-	-	-	-	-	-
	Construction	-	-	6.9	0.5	-	-	-	0,2
	Wholesale and retail trade	2.3	3.0	16.0	1.0	1.0	0.2	15.7	2,6
	Transportation and storage	3.7	20.8	38.5	23.1	2.6	1.1	-	7,6
	Accommodation and food service activities	4.1	10.3	-	4.1	13.5	-	-	5,0
	Information and communications	19.8	7.3	-	23.7	10.8	-	-	17,1
	Real estate activities; Professional, scientific and technical activities	0.5	-	-	0.6	-	-	-	0,4
	Administrative and support support activities; Repair of computers	6.9	6.9	3.6	10.3	1.7	-	-	6,6
Total		2,8	4.1	9.6	5.1	2.0	0.9	4.3	3.3

B8: What was the percentage of the total turnover from EDI-type sale of goods or services during 2019?¹⁾

%

	Enterprises							
	Size class			Region				Total
	Small (10–49)	Medium (50–249)	Large (250+)	Beogradski	Vojvodina	Šumadija i Zapadna Srbija	Južna i Istočna Srbija	
YES								
1–24%	44.0	52.2	38.8	32.4	20.1	100.0	95.8	45.3
25–49%	40.5	7.5	22.3	41.4	34.7	0.0	0.0	30.9
50–74%	12.3	0.0	24.2	8.8	30.3	0.0	4.2	10.8
75–100%	3.2	40.4	14.7	17.4	15.0	0.0	0.0	13.0

¹⁾ Results refer only to enterprises that said YES in question B7.

MODULE C: Invoicing

C1: During 2019, did your enterprise send any types of the following invoices? %

Enterprises	Size class			Region				Total
	Small (10–49)	Medium (50–249)	Large (250+)	Beogradski	Vojvodina	Šumadija i Zapadna Srbija	Južna i Istočna Srbija	

Electronic invoices in a standard structure suitable for automated processing EDI (e.g. *EDIFACT*), *XML* (e.g. *UBL*), excluding the transmission of PDF files

Activity	Manufacturing	13.0	16.5	24.9	14.3	20.9	5.9	21.4	14,6
	Electricity, gas, steam and air conditioning supply; Water supply and sewerage	6.0	10.1	40.6	9.5	-	4.4	39.0	10,9
	Construction	1.5	18.3	31.1	9.3	-	0.8	8.5	5,2
	Wholesale and retail trade	20.6	13.7	35.5	18.2	10.0	33.3	24.8	20,0
	Transportation and storage	9.6	40.4	27.2	22.3	7.4	16.8	14.2	15,1
	Accommodation and food service activities	28.5	20.9		27.6	42.6	13.1	17.0	27,3
	Information and communications	51.0	34.4	61.5	54.8	58.0	3.3	16.9	48,2
	Real estate activities; Professional, scientific and technical activities	25.0	9.0	14.0	19.2	21.9	38.5	30.9	22,5
	Administrative and support support activities; Repair of computers	41.8	21.7	47.3	49.3	28.3	2.9	23.0	38,1
Total		18,8	18.1	30.7	22.7	16.8	14.3	21.4	19.2

Invoices sent electronically, not suitable for automated processing (e.g. e-mails, *JPEG* or other formats), including the transmission of PDF files

Activity	Manufacturing	70.7	76.0	77.2	67.8	61.6	82.1	78.8	72,4
	Electricity, gas, steam and air conditioning supply; Water supply and sewerage	48.6	57.6	85.9	41.6	57.5	39.8	85.4	55,8
	Construction	56.8	60.1	59.8	64.2	42.4	46.5	79.5	57,5
	Wholesale and retail trade	72.0	64.9	90.8	92.2	55.7	51.1	61.9	71,4
	Transportation and storage	50.4	61.6	93.3	69.5	60.6	29.4	54.3	53,7
	Accommodation and food service activities	76.0	79.7	100.0	75.7	76.9	72.9	89.9	76,6
	Information and communications	80.0	69.8	76.9	75.9	80.0	63.3	100.0	78,1
	Real estate activities; Professional, scientific and technical activities	76.5	83.4	100.0	78.0	69.1	87.9	86.3	77,9
	Administrative and support support activities; Repair of computers	71.1	62.3	88.9	62.0	76.7	92.6	93.9	70,7
Total		68,9	69.8	81.9	76.6	60.6	64.3	74.7	69.6

C1: During 2019, did your enterprise send any types of the following invoices?
(continued)

%

Enterprises	Size class			Region				Total
	Small (10–49)	Medium (50–249)	Large (250+)	Beogradski	Vojvodina	Šumadija i Zapadna Srbija	Južna i Istočna Srbija	

Invoices in paper form

Activity	Manufacturing	98.2	97.5	100.0	100.0	96.5	98.0	98.6	98,1
	Electricity, gas, steam and air conditioning supply; Water supply and sewerage	100.0	96.6	100.0	100.0	100.0	100.0	93.3	98,6
	Construction	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100,0
	Wholesale and retail trade	99.9	99.2	100.0	100.0	100.0	100.0	98.4	99,8
	Transportation and storage	100.0	97.5	100.0	100.0	100.0	100.0	96.9	99,6
	Accommodation and food service activities	99.1	97.4	100.0	99.3	100.0	100.0	89.9	98,8
	Information and communications	95.6	79.8	100.0	95.7	85.4	87.8	93.1	92,8
	Real estate activities; Professional, scientific and technical activities	98.1	99.4	100.0	99.4	100.0	87.9	98.6	98,3
	Administrative and support support activities; Repair of computers	93.6	100.0	100.0	92.5	100.0	100.0	100.0	95,4
Total		98,8	97.4	100.0	99.0	98.3	98.5	97.8	98.6

MODULE D: Use of cloud computing services

D1: Does your enterprise pay cloud computing services over the Internet? %

Enterprises		Size class			Region				Total
		Small (10–49)	Medium (50–249)	Large (250+)	Beogradski	Vojvodina	Šumadija i Zapadna Srbija	Južna i Istočna Srbija	
YES									
Activity	Manufacturing	13.6	21.5	30.2	13.3	20.4	13.8	20.1	16,5
	Electricity, gas, steam and air conditioning supply; Water supply and sewerage	8.3	15.2	17.0	2.9	19.6	-	22.8	12,0
	Construction	16.8	7.7	25.7	1.7	39.4	10.1	27.8	15,5
	Wholesale and retail trade	7.9	54.7	43.1	15.4	21.9	0.8	20.4	14,7
	Transportation and storage	3.7	36.4	46.2	23.3	2.6	7.1	7.8	10,3
	Accommodation and food service activities	15.8	42.5	-	23.4	17.2	5.6	25.2	19,4
	Information and communications	57.2	43.6	100.0	65.8	27.3	70.0	37.9	55,6
	Real estate activities; Professional, scientific and technical activities	30.3	23.4	22.8	33.6	15.7	36.2	15.1	29,2
	Administrative and support support activities; Repair of computers	19.1	19.0	33.1	16.0	25.0	42.2	10.6	20,2
Total		15,4	29.1	33.6	20.9	20.7	11.2	20.4	18.6

D2: Does your enterprise pay any of the following services used over the Internet?¹⁾

%

Enterprises	Size class			Region				Total
	Small (10–49)	Medium (50–249)	Large (250+)	Beogradski	Vojvodina	Šumadija i Zapadna Srbija	Južna i Istočna Srbija	

e-mail (as cloud computing service)

Activity	Manufacturing	78.1	74.0	85.0	81.4	82.0	80.1	62.1	77,6
	Electricity, gas, steam and air conditioning supply; Water supply and sewerage	64.1	100.0	100.0	100.0	100.0	-	69.3	87,7
	Construction	74.1	100.0	73.3	73.3	100.0	-	69.4	76,3
	Wholesale and retail trade	75.3	83.5	70.0	86.2	88.6	75.0	39.4	79,0
	Transportation and storage	100.0	71.1	74.2	93.5	100.0	15.4	100.0	79,9
	Accommodation and food service activities	100.0	80.9	-	93.2	100.0	75.0	100.0	94,2
	Information and communications	82.9	72.7	84.6	88.1	53.6	60.3	80.0	81,5
	Real estate activities; Professional, scientific and technical activities	72.2	97.3	23.1	77.3	100.0	33.3	90.8	74,5
	Administrative and support support activities; Repair of computers	67.5	63.7	71.8	79.7	83.2	12.6	100.0	67,3
Total		78.1	80.0	78.1	84.8	87.8	55.5	63.0	78.6

Office software (text processing and tables, e.g. *Word*, *Excel*) (as cloud computing service)

Activity	Manufacturing	54.4	67.7	73.4	77.9	62.9	47.9	57.2	60,7
	Electricity, gas, steam and air conditioning supply; Water supply and sewerage	-	22.2	100.0	100.0	9.1	-	40.1	24,7
	Construction	72.4	100.0	53.3	53.3	70.7	100.0	69.4	73,9
	Wholesale and retail trade	81.4	98.3	90.2	100.0	90.2	75.0	64.7	90,2
	Transportation and storage	100.0	64.1	61.8	90.3	100.0	15.4	60.0	74,0
	Accommodation and food service activities	96.6	55.6	-	83.5	100.0	50.0	77.5	84,2
	Information and communications	56.5	92.3	61.5	64.5	56.5	57.1	46.4	61,9
	Real estate activities; Professional, scientific and technical activities	61.3	97.3	23.1	64.9	92.8	33.3	100.0	65,0
	Administrative and support support activities; Repair of computers	66.7	100.0	76.2	57.7	80.2	100.0	100.0	74,3
Total		65.6	81.5	73.1	76.5	73.4	54.4	62.2	70.7

¹⁾ Results refer only to enterprises that said YES in question D1.

D2: Does your enterprise pay any of the following cloud computing services used over the Internet?¹⁾ (continued)

%

Enterprises		Size class			Region				Total
		Small (10–49)	Medium (50–249)	Large (250+)	Beogradski	Vojvodina	Šumadija i Zapadna Srbija	Južna i Istočna Srbija	
Hosting the enterprise databases (as cloud computing service)									
Activity	Manufacturing	57.9	45.0	44.0	64.7	36.9	60.5	56.5	52,3
	Electricity, gas, steam and air conditioning supply; Water supply and sewerage	-	77.8	73.0	-	61.0	-	40.1	50,5
	Construction	36.3	77.0	26.7	26.7	41.4	-	61.3	39,5
	Wholesale and retail trade	92.1	85.9	79.0	84.9	91.8	50.0	92.5	88,3
	Transportation and storage	-	12.5	14.6	2.2	100.0	-	-	9,3
	Accommodation and food service activities	89.7	69.5	-	90.4	72.1	75.0	62.5	83,6
	Information and communications	60.4	53.7	61.5	53.9	93.3	42.9	95.5	59,5
	Real estate activities; Professional, scientific and technical activities	48.3	94.6	76.9	50.4	96.9	33.3	81.6	54,1
	Administrative and support support activities; Repair of computers	45.0	100.0	50.0	49.0	96.9	12.6	100.0	56,2
Total		58.9	65.7	50.3	60.2	64.8	42.5	68.4	60.2
Storage of files (as cloud computing service)									
Activity	Manufacturing	25.8	41.2	53.1	22.8	26.3	55.5	27.2	33,7
	Electricity, gas, steam and air conditioning supply; Water supply and sewerage	-	100.0	27.0	100.0	51.9	-	58.4	56,2
	Construction	-	38.5	26.7	26.7	6.0	-	-	4,6
	Wholesale and retail trade	91.8	64.7	55.4	61.9	93.0	50.0	81.7	76,5
	Transportation and storage	-	57.1	25.8	45.4	87.7	-	-	35,8
	Accommodation and food service activities	79.7	45.2	-	72.7	72.1	75.0	40.0	69,3
	Information and communications	47.8	78.1	53.8	50.6	57.4	42.9	80.0	52,4
	Real estate activities; Professional, scientific and technical activities	68.4	60.8	61.5	76.4	78.1	-	90.8	67,4
	Administrative and support support activities; Repair of computers	84.3	88.3	56.4	73.1	93.1	93.2	42.1	81,5
Total		50.3	58.7	48.9	58.3	52.5	42.2	45.0	52.6

¹⁾ Results refer only to enterprises that said YES in question D1.

D2: Does your enterprise pay any of the following cloud computing services used over the Internet?¹⁾ (continued)

%

Enterprises	Size class			Region				Total
	Small (10–49)	Medium (50–249)	Large (250+)	Beogradski	Vojvodina	Šumadija i Zapadna Srbija	Južna i Istočna Srbija	

Software apps for finances and accounting

Activity	Manufacturing	60.4	53.2	28.7	69.3	33.8	75.2	48.7	54,6
	Electricity, gas, steam and air conditioning supply; Water supply and sewerage	35.9	55.6	27.0	100.0	51.9	-	30.7	45,1
	Construction	27.6	61.5	26.7	26.7	35.3	-	38.7	30,5
	Wholesale and retail trade	64.1	29.7	46.7	27.6	53.2	25.0	82.6	46,3
	Transportation and storage	100.0	73.5	43.8	90.3	-	100.0	-	76,3
	Accommodation and food service activities	56.4	33.3	-	48.6	64.9	25.0	40.0	49,4
	Information and communications	43.7	46.9	53.8	48.8	13.9	39.7	50.9	44,6
	Real estate activities; Professional, scientific and technical activities	59.8	54.5	61.5	59.9	75.0	33.3	90.8	59,2
	Administrative and support support activities; Repair of computers	47.9	52.0	39.1	48.1	83.2	5.8	21.1	47,5
Total		53.7	45.1	37.3	51.3	44.2	53.9	54.5	50.1

Software app for customer relationship management (CRM) for managing information about customers (as cloud computing service)

Activity	Manufacturing	29.9	11.4	15.8	16.9	24.5	27.7	17.7	22.6
	Electricity, gas, steam and air conditioning supply; Water supply and sewerage	-	55.6	-	-	51.9	-	-	29.3
	Construction	-	23.0	26.7	26.7	-	-	8.1	3.2
	Wholesale and retail trade	10.5	27.7	23.1	27.4	5.9	25.0	27.9	19.7
	Transportation and storage	-	-	20.6	2.2	-	-	20.0	3.3
	Accommodation and food service activities	49.5	22.0	-	45.8	27.9	25.0	40.0	41.1
	Information and communications	38.1	40.2	53.8	45.9	7.2	12.7	46.4	39.0
	Real estate activities; Professional, scientific and technical activities	17.0	31.8	61.5	25.3	7.2	-	-	19.3
	Administrative and support support activities; Repair of computers	27.9	4.3	43.6	51.0	-	-	21.1	25.3
Total		23.1	21.8	24.6	31.5	13.2	16.3	20.4	22.8

¹⁾ Results refer only to enterprises that said YES in question D1.

D2: Does your enterprise pay any of the following cloud computing services used over the Internet?¹⁾ (continued)

%

Enterprises		Size class			Region				Total
		Small (10–49)	Medium (50–249)	Large (250+)	Beogradski	Vojvodina	Šumadija i Zapadna Srbija	Južna i Istočna Srbija	
Computer power to run the enterprise's own software (as cloud computing service)									
Activity	Manufacturing	13,9	24,8	20,2	39,2	14,7	13,1	9,4	18,0
	Electricity, gas, steam and air conditioning supply; Water supply and sewerage	-	55,6	27,0	100,0	51,9	-	-	32,8
	Construction	-	61,5	26,7	26,7	6,0	-	8,1	6,6
	Wholesale and retail trade	33,8	29,0	50,7	28,8	41,0	25,0	24,5	32,5
	Transportation and storage	-	-	-	-	-	-	-	-
	Accommodation and food service activities	26,4	18,1	-	10,9	64,9	25,0	40,0	23,9
	Information and communications	36,5	44,9	46,2	38,4	53,6	12,7	46,4	38,1
	Real estate activities; Professional, scientific and technical activities	14,0	28,1	-	20,4	4,1	-	-	15,5
	Administrative and support support activities; Repair of computers	38,0	4,3	10,9	18,2	-	87,4	21,1	28,0
Total		21,3	26,8	24,9	26,7	24,4	15,9	16,0	23,1

¹⁾ Results refer only to enterprises that said YES in question D1.

MODULE E: BIG DATA analysis

E1: During 2019, did your enterprise perform a Big data analysis on any of the following data sources? %

Enterprises	Size class			Region				Total
	Small (10–49)	Medium (50–249)	Large (250+)	Beogradski	Vojvodina	Šumadija i Zapadna Srbija	Južna i Istočna Srbija	

Data from smart devices or sensors (e.g. machine-to-machine M2M communication, digital sensors, Radio Frequency Identification RFID, etc.)

Activity	Manufacturing	0.7	4.0	4.3	0.3	1.1	1.2	5.8	1,7
	Electricity, gas, steam and air conditioning supply; Water supply and sewerage	-	-	-	-	-	-	-	-
	Construction	-	1.8	13.7	0.9	-	-	2.3	0,7
	Wholesale and retail trade	-	3.0	19.9	1.3	1.0	-	-	0,8
	Transportation and storage	-	-	-	-	-	-	-	-
	Accommodation and food service activities	1.1	-	-	-	4.8	-	-	0,9
	Information and communications	4.0	8.2	23.1	5.9	4.7	-	5.9	5,2
	Real estate activities; Professional, scientific and technical activities	-	4.9	5.3	1.1	0.5	-	-	0,8
	Administrative and support support activities; Repair of computers	-	1.2	-	-	-	2.5	-	0,2
Total		0.4	3.0	6.6	1.1	1.0	0.5	2.5	1.1

Geolocation data from the use of portable devices (e.g. portable devices using mobile telephone networks, wireless connections or GPRS)

Activity	Manufacturing	0.1	2.5	5.4	0.6	0.6	1.3	1.7	1,0
	Electricity, gas, steam and air conditioning supply; Water supply and sewerage	-	-	2.9	-	-	-	1.3	0,3
	Construction	1.5	1.8	16.7	0.9	-	0.4	10.8	1,9
	Wholesale and retail trade	-	3.0	11.9	0.9	1.0	-	-	0,6
	Transportation and storage	-	-	4.0	0.5	-	-	-	0,1
	Accommodation and food service activities	1.1	-	-	-	4.8	-	-	0,9
	Information and communications	1.5	8.8	7.7	4.5	-	-	1.7	3,0
	Real estate activities; Professional, scientific and technical activities	-	4.9	5.3	1.1	0.5	-	-	0,8
	Administrative and support support activities; Repair of computers	-	1.2	3.6	0.5	-	2.5	-	0,5
Total		0.3	2.5	6.7	1.0	0.7	0.6	1.9	0.9

E1: During 2019, did your enterprise perform a Big data analysis on any of the following data sources? (continued)

%

Enterprises	Size class			Region				Total
	Small (10–49)	Medium (50–249)	Large (250+)	Beogradski	Vojvodina	Šumadija i Zapadna Srbija	Južna i Istočna Srbija	

Data generated from social media e.g. social networks, blogs, multimedia content exchange, websites, etc.)

Activity	Manufacturing	0.7	1.6	2.1	0.3	0.7	0.1	4.4	1,0
	Electricity, gas, steam and air conditioning supply; Water supply and sewerage	-	-	-	-	-	-	-	-
	Construction	-	1.8	6.9	0.5	-	-	2.3	0,5
	Wholesale and retail trade	-	3.0	-	0.9	-	-	-	0,4
	Transportation and storage	-	-	4.0	0.5	-	-	-	0,1
	Accommodation and food service activities	0.9	3.8	-	0.9	3.9	-	-	1,3
	Information and communications	4.0	24.0	30.8	10.5	4.7	-	7.6	8,3
	Real estate activities; Professional, scientific and technical activities	-	-	5.3	-	0.5	-	-	0,1
	Administrative and support support activities; Repair of computers	-	-	3.6	0.5	-	-	-	0,3
Total		0.4	2.7	3.2	1.3	0.6	0.0	2.1	0.9

Other Big data sources not specified above, e.g. stock index data, transaction data, other open web data

Activity	Manufacturing	1.1	0.9	1.9	1.5	0.1	0.1	4.6	1,1
	Electricity, gas, steam and air conditioning supply; Water supply and sewerage	-	-	-	-	-	-	-	-
	Construction	-	-	6.9	0.5	-	-	-	0,2
	Wholesale and retail trade	-	3.0	-	0.9	-	-	-	0,4
	Transportation and storage	-	-	-	-	-	-	-	-
	Accommodation and food service activities	-	6.0	-	0.9	1.6	-	-	0,8
	Information and communications	1.5	19.0	46.2	8.6	1.0	-	-	5,6
	Real estate activities; Professional, scientific and technical activities	4.1	-	5.3	5.4	0.5	-	-	3,5
	Administrative and support support activities; Repair of computers	-	1.2	-	-	-	2.5	-	0,2
Total		0.7	2.2	2.8	2.0	0.2	0.1	1.6	1.1

E2: During 2019, did your enterprise use any of the following methods to analyse Big data? ¹⁾

%

Enterprises	Size class			Region				Total
	Small (10–49)	Medium (50–249)	Large (250+)	Beogradski	Vojvodina	Šumadija i Zapadna Srbija	Južna i Istočna Srbija	

Machine learning (e.g. deep learning)

Including “training” a computer model to better perform an automated task, e.g. sample recognition.

Activity	Manufacturing	-	-	19.7	5.5	8.5	-	2.9	3,7
	Electricity, gas, steam and air conditioning supply; Water supply and sewerage	-	-	-	-	-	-	-	-
	Construction	-	-	41.2	50.0	-	-	-	9,7
	Wholesale and retail trade	-	100.0	60.0	71.5	100.0	-	-	80,0
	Transportation and storage	-	-	-	-	-	-	-	-
	Accommodation and food service activities	-	-	-	-	-	-	-	-
	Information and communications	82.9	71.8	-	70.9	81.8	-	-	66,7
	Real estate activities; Professional, scientific and technical activities	-	-	-	-	-	-	-	-
	Administrative and support support activities; Repair of computers	-	-	-	-	-	-	-	-
Total		14.6	35.7	28.8	35.0	36.4	-	1.7	25.1

Natural language processing, natural language generation or speech recognition NLP, NLG and speech recognition is the ability of a computer to understand a language as it is spoken, to convert data into natural language representation or to recognize words and phrases in spoken language and convert them into machine readable format.

Activity	Manufacturing	-	-	6.6	5.5	-	-	-	1,2
	Electricity, gas, steam and air conditioning supply; Water supply and sewerage	-	-	-	-	-	-	-	-
	Construction	-	-	41.2	50.0	-	-	-	9,7
	Wholesale and retail trade	-	100.0	-	71.5	-	-	-	50,1
	Transportation and storage	-	-	-	-	-	-	-	-
	Accommodation and food service activities	-	-	-	-	-	-	-	-
	Information and communications	36.9	26.3	42.9	37.8	18.2	-	-	32,2
	Real estate activities; Professional, scientific and technical activities	-	-	-	-	-	-	-	-
	Administrative and support support activities; Repair of computers	-	-	-	-	-	-	-	-
Total		6.5	22.0	13.7	24.4	3.2	-	-	13.6

¹⁾ Result refer only to enterprises that said YES to any option in question E1.

E2: During 2019, did your enterprise use any of the following methods to analyse Big data? (continued)

%

Enterprises	Size class			Region				Total
	Small (10–49)	Medium (50–249)	Large (250+)	Beogradski	Vojvodina	Šumadija i Zapadna Srbija	Južna i Istočna Srbija	

Other method of Big data analysis

DeActivity	Manufacturing	100.0	100.0	93.4	94.5	100.0	100.0	100.0	98,8
	Electricity, gas, steam and air conditioning supply; Water supply and sewerage	-	-	100.0	-	-	-	100.0	100,0
	Construction	100.0	100.0	100.0	100.0	-	100.0	100.0	100,0
	Wholesale and retail trade	-	100.0	40.0	100.0	-	-	-	70,1
	Transportation and storage	-	-	100.0	100.0	-	-	-	100,0
	Accommodation and food service activities	100.0	100.0	-	100.0	100.0	-	-	100,0
	Information and communications	100.0	39.8	57.1	67.5	18.2	-	100.0	63,6
	Real estate activities; Professional, scientific and technical activities	100.0	100.0	100.0	100.0	100.0	-	-	100,0
Total		100.0	81.9	74.1	88.9	66.0	100.0	100.0	88.5

E3: During 2019, did your enterprise have another enterprise or organization perform a Big data analysis for your enterprise?

%

Enterprises		Size class			Region				Total
		Small (10–49)	Medium (50–249)	Large (250+)	Beogradski	Vojvodina	Šumadija i Zapadna Srbija	Južna i Istočna Srbija	
Activity	Manufacturing	-	-	43.2	18.4	8.5	7.8	2.9	8.2
	Electricity, gas, steam and air conditioning supply; Water supply and sewerage	-	-	-	-	-	-	-	-
	Construction	-	-	41.2	50.0	-	-	-	9.7
	Wholesale and retail trade	-	100.0	60.0	71.5	100.0	-	-	80.0
	Transportation and storage	-	-	-	-	-	-	-	-
	Accommodation and food service activities	-	63.6	-	100.0	-	-	-	21.0
	Information and communications	54.0	11.7	-	24.4	-	-	77.3	25.4
	Real estate activities; Professional, scientific and technical activities	-	-	-	-	-	-	-	-
	Administrative and support support activities; Repair of computers	-	100.0	-	-	-	100.0	-	47.0
Total		9.5	22.9	36.5	24.4	21.8	14.9	7.6	19.4

E6: During 2019, did your enterprise sell (access) any of its Big data analysis?

%

Enterprises		Size class			Region				Total
		Small (10–49)	Medium (50–249)	Large (250+)	Beogradski	Vojvodina	Šumadija i Zapadna Srbija	Južna i Istočna Srbija	
Activity	Manufacturing	55.1	-	-	-	-	-	48.9	20.9
	Electricity, gas, steam and air conditioning supply; Water supply and sewerage	-	-	-	-	-	-	-	-
	Construction	-	-	41.2	50.0	-	-	-	9.7
	Wholesale and retail trade	-	100.0	-	71.5	-	-	-	50.1
	Transportation and storage	-	-	-	-	-	-	-	-
	Accommodation and food service activities	-	63.6	-	100.0	-	-	-	21.0
	Information and communications	36.9	11.7	-	24.4	-	-	-	19.2
	Real estate activities; Professional, scientific and technical activities	-	100.0	-	17.3	-	-	-	17.0
	Administrative and support support activities; Repair of computers	-	-	-	-	-	-	-	-
Total		21.4	29.4	5.0	27.6	-	-	28.9	21.4

E7: During 2019, did your enterprise buy (access) any of its Big data analysis? %

Enterprises		Size class			Region				Total
		Small (10–49)	Medium (50–249)	Large (250+)	Beogradski	Vojvodina	Šumadija i Zapadna Srbija	Južna i Istočna Srbija	
Activity	Manufacturing	-	-	10.9	9.2	-	-	-	2,1
	Electricity, gas, steam and air conditioning supply; Water supply and sewerage	-	-	-	-	-	-	-	-
	Construction	-	-	41.2	50.0	-	-	-	9,7
	Wholesale and retail trade	-	100.0	-	71.5	-	-	-	50,1
	Transportation and storage	-	-	-	-	-	-	-	-
	Accommodation and food service activities	-	-	-	-	-	-	-	-
	Information and communications	36.9	11.7	-	24.4	-	-	-	19,2
	Real estate activities; Professional, scientific and technical activities	-	100.0	-	17.3	-	-	-	17,0
	Administrative and support support activities; Repair of computers	-	-	-	-	-	-	-	-
	Total	6.5	25.7	8.6	26.2	-	-	-	14.1

MODULE F: ICT specialists and skills

F1: Does your Enterprise employ ICT specialists?

%

Enterprises	Size class			Region				Total
	Small (10–49)	Medium (50–249)	Large (250+)	Beogradski	Vojvodina	Šumadija i Zapadna Srbija	Južna i Istočna Srbija	

YES

Activity	Manufacturing	6.3	36.2	67.0	18.8	17.5	14.1	20.1	17.1
	Electricity, gas, steam and air conditioning supply; Water supply and sewerage	9.8	25.9	77.1	14.5	36.4	19.6	10.4	22.7
	Construction	1.5	30.3	70.6	7.4	10.8	5.2	13.0	8.4
	Wholesale and retail trade	2.5	49.6	64.2	13.5	5.1	7.6	10.6	9.9
	Transportation and storage	7.3	25.3	93.3	38.1	5.8	1.8	1.6	13.2
	Accommodation and food service activities	18.1	40.3	-	26.4	22.7	5.1	11.9	21.1
	Information and communications	83.1	80.9	100.0	85.5	84.8	66.7	75.2	83.0
	Real estate activities; Professional, scientific and technical activities	24.2	53.6	78.4	29.9	39.1	26.0	2.8	29.4
	Administrative and support support activities; Repair of computers	32.3	18.7	54.1	37.6	19.0	9.8	43.7	31,2
Total		12.1	39.4	69.2	25.7	17.7	11.6	16.5	19.3

F2: During 2019, did your enterprise provide any type of training to develop ICT related skills for the personnel employed?¹⁾

%

Enterprises	Size class			Region				Total
	Small (10-49)	Medium (50-249)	Large (250+)	Beogradski	Vojvodina	Šumadija i Zapadna Srbija	Južna i Istočna Srbija	

Training for ICT specialists¹⁾

Activity	Manufacturing	3.0	17.4	42.2	10.3	9.2	4.9	14.0	8,8
	Electricity, gas, steam and air conditioning supply; Water supply and sewerage	-	9.1	35.8	5.8	4.8	7.9	10.4	7,1
	Construction	-	2.8	49.5	2.7	0.6	2.5	-	1,9
	Wholesale and retail trade	1.9	24.8	31.4	6.2	2.4	5.6	9.0	5,5
	Transportation and storage	3.7	4.5	49.4	15.7	2.6	-	1.6	5,4
	Accommodation and food service activities	4.8	15.4	-	8.2	7.6	0.9	-	6,2
	Information and communications	42.8	70.8	69.2	41.8	56.0	57.8	69.7	48,5
	Real estate activities; Professional, scientific and technical activities	11.0	21.3	42.1	16.1	13.9	-	1.4	13,0
	Administrative and support support activities; Repair of computers	14.1	2.4	45.2	18.3	3.8	4.9	23.0	14,1
Total		5.7	18.1	42.0	12.2	7.7	5.0	11.2	9.3

Training for other persons employed

Activity	Manufacturing	8.3	23.3	38.8	24.3	7.8	9.3	17.8	13,8
	Electricity, gas, steam and air conditioning supply; Water supply and sewerage	12.2	30.6	16.6	35.1	-	31.0	27.9	20,3
	Construction	1.5	24.1	45.1	10.3	3.0	2.2	8.5	6,6
	Wholesale and retail trade	9.7	30.5	29.2	8.8	8.3	15.7	31.3	12,8
	Transportation and storage	3.7	13.6	81.0	18.0	7.4	1.8	0.8	8,0
	Accommodation and food service activities	12.4	20.1		15.7	7.6	14.0	10.1	13,4
	Information and communications	42.8	70.4	92.3	45.0	61.7	61.1	37.9	48,9
	Real estate activities; Professional, scientific and technical activities	16.8	26.7	48.5	23.8	12.4	12.1	-	18,8
	Administrative and support support activities; Repair of computers	11.4	4.9	43.1	17.0	4.8	9.8	2.2	12,5
Total		10.6	26.0	41.4	18.4	9.5	11.4	18.7	14.6

¹⁾ Result refer only to enterprise that employ ICT specialists.

F3: During 2019, did your enterprise recruit or try to recruit ICT specialists?

%

Enterprises	Size class			Region				Total
	Small (10–49)	Medium (50–249)	Large (250+)	Beogradski	Vojvodina	Šumadija i Zapadna Srbija	Južna i Istočna Srbija	

YES

Activity	Manufacturing	0.6	5.0	14.0	3.9	2.2	0.9	4.1	2.5
	Electricity, gas, steam and air conditioning supply; Water supply and sewerage	-	-	-	-	-	-	-	-
	Construction	-	10.9	21.8	5.1	-	0.4	2.3	2.5
	Wholesale and retail trade	2.0	23.5	32.5	6.6	2.1	5.6	7.3	5.4
	Transportation and storage	-	4.5	24.4	2.8	2.6	-	-	1.6
	Accommodation and food service activities	2.2	10.5	-	0.9	12.4	2.3	-	3.3
	Information and communications	37.6	50.5	76.9	31.7	71.2	30.0	43.4	40.8
	Real estate activities; Professional, scientific and technical activities	8.6	16.2	17.5	15.3	-	-	1.4	9.9
	Administrative and support support activities; Repair of computers	6.9	-	25.5	10.9	1.5	-	-	7.0
Total		3.8	11.7	19.8	8.7	4.9	2.3	5.3	5.9

F4: During 2019, did your enterprise have vacancies for ICT specialists that were difficult to fill?¹⁾

%

Enterprises		Size class			Region				Total
		Small (10–49)	Medium (50–249)	Large (250+)	Beogradski	Vojvodina	Šumadija i Zapadna Srbija	Južna i Istočna Srbija	
YES									
Activity	Manufacturing	56.3	58.5	59.4	77.6	34.4	27.1	68.3	58,4
	Electricity, gas, steam and air conditioning supply; Water supply and sewerage	-	-	-	-	-	-	-	-
	Construction	-	16.2	86.5	24.5	-	-	100.0	33,0
	Wholesale and retail trade	-	72.8	25.9	74.9	-	7.5	20.4	44,9
	Transportation and storage	-	-	56.1	63.3	-	-	-	31,0
	Accommodation and food service activities	-	57.3		100.0	12.6	-	-	25,1
	Information and communications	48.9	72.8	90.0	40.1	67.6	100.0	67.5	56,0
	Real estate activities; Professional, scientific and technical activities	5.3	39.4	50.0	14.0	-	-	100.0	14,9
	Administrative and support support activities; Repair of computers	14.9	-	63.4	27.6	50.0	-	-	28,7
Total		28.6	60.0	56.9	43.4	46.0	29.4	52.3	43.7

¹⁾ Results refer only to enterprises that said YES in question F3.

F5: During 2019, did your enterprise have any of the following difficulties to recruit ICT specialists?

%

Enterprises	Size class			Region				Total
	Small (10-49)	Medium (50-249)	Large (250+)	Beogradski	Vojvodina	Šumadija i Zapadna Srbija	Južna i Istočna Srbija	

Lack of applications

Activity	Manufacturing	-	21.1	27.7	10.1	43.5	33.3	22.1	19,8
	Electricity, gas, steam and air conditioning supply; Water supply and sewerage	-	-	-	-	-	-	-	-
	Construction	-	-	36.4	36.4	-	-	-	22,8
	Wholesale and retail trade	-	25.6	-	18.2	-	-	100.0	23,8
	Transportation and storage	-	-	29.0	29.0	-	-	-	29,0
	Accommodation and food service activities	-	-	-	-	-	-	-	-
	Information and communications	16.9	50.4	77.8	66.5	1.6	40.7	23.5	30,7
	Real estate activities; Professional, scientific and technical activities	-	13.3	-	9.0	-	-	-	8,4
	Administrative and support support activities; Repair of computers	100.0	-	13.2	40.6	100.0	-	-	45,5
Total		18.3	29.0	31.4	30.8	7.4	33.6	31.4	25.9

Lack of relevant of ICT related qualifications from ICT education and/or training

Activity	Manufacturing	-	63.5	67.9	36.2	43.5	33.3	93.7	54.3
	Electricity, gas, steam and air conditioning supply; Water supply and sewerage	-	-	-	-	-	-	-	-
	Construction	-	-	100.0	100.0	-	-	-	62.6
	Wholesale and retail trade	-	82.6	48.5	79.9	-	47.1	100.0	80.3
	Transportation and storage	-	-	29.0	29.0	-	-	-	29.0
	Accommodation and food service activities	-	36.4	-	-	100.0	-	-	36.4
	Information and communications	69.5	65.2	100.0	76.4	52.9	88.9	100.0	70.2
	Real estate activities; Professional, scientific and technical activities	-	23.2	-	9.0	-	-	100.0	14.8
	Administrative and support support activities; Repair of computers	100.0	-	35.5	55.9	100.0	-	-	59.5
Total		62.4	68.1	64.8	63.9	53.8	74.1	89.0	65.6

F5: During 2019, did your enterprise have any of the following difficulties to recruit ICT specialists? (continued)

%

Enterprises	Size class			Region				Total
	Small (10–49)	Medium (50–249)	Large (250+)	Beogradski	Vojvodina	Šumadija i Zapadna Srbija	Južna i Istočna Srbija	

Applicants' lack of relevant experience

Activity	Manufacturing	-	40.4	78.6	47.5	56.5	33.3	44.2	47,0
	Electricity, gas, steam and air conditioning supply; Water supply and sewerage	-	-	-	-	-	-	-	-
	Construction	-	100.0	100.0	100.0	-	-	100.0	100,0
	Wholesale and retail trade	-	100.0	75.1	98.1	-	100.0	100.0	98,3
	Transportation and storage	-	-	-	-	-	-	-	-
	Accommodation and food service activities	-	100.0	-	100.0	100.0	-	-	100,0
	Information and communications	60.7	88.4	100.0	93.2	55.0	29.6	100.0	71,4
	Real estate activities; Professional, scientific and technical activities	-	23.2	-	9.0	-	-	100.0	14,8
	Administrative and support support activities; Repair of computers	100.0	-	35.5	55.9	100.0	-	-	59,5
Total		55.0	83.1	68.7	78.0	57.1	40.5	79.9	71.4

Applicants' salary expectations too high

Activity	Manufacturing	100.0	59.6	21.4	52.5	43.5	66.7	55.8	53,0
	Electricity, gas, steam and air conditioning supply; Water supply and sewerage	-	-	-	-	-	-	-	-
	Construction	-	-	-	-	-	-	-	-
	Wholesale and retail trade	-	-	24.9	1.9	-	-	-	1,7
	Transportation and storage	-	-	100.0	100.0	-	-	-	100,0
	Accommodation and food service activities	-	-	-	-	-	-	-	-
	Information and communications	39.3	11.6	-	6.8	45.0	70.4	-	28,6
	Real estate activities; Professional, scientific and technical activities	100.0	76.8	100.0	91.0	-	-	-	85,2
	Administrative and support support activities; Repair of computers	-	-	64.5	44.1	-	-	-	40,5
Total		45.0	16.9	31.3	22.0	42.9	59.5	20.1	28.6

F6A: During 2019, who performed ICT functions in your enterprise
(employees in the enterprise)

%

Enterprises		Size class			Region				Total
		Small (10–49)	Medium (50–249)	Large (250+)	Beogradski	Vojvodina	Šumadija i Zapadna Srbija	Južna i Istočna Srbija	
YES									
Activity	Manufacturing	33.3	49.3	77.6	43.5	49.7	29.8	36.9	39,8
	Electricity, gas, steam and air conditioning supply; Water supply and sewerage	29.5	59.7	77.1	70.0	36.4	19.6	85.1	46,5
	Construction	23.3	62.5	80.4	45.8	10.8	22.3	38.0	31,7
	Wholesale and retail trade	16.2	56.4	75.4	16.3	11.2	33.2	50.9	22,7
	Transportation and storage	22.3	38.4	92.1	27.1	17.3	29.4	48.1	27,3
	Accommodation and food service activities	26.2	60.1	100.0	34.6	22.7	16.8	57.9	31,3
	Information and communications	85.0	86.9	100.0	87.4	86.7	72.2	82.4	85,7
	Real estate activities; Professional, scientific and technical activities	46.4	61.4	63.2	45.9	42.5	63.8	72.6	48,9
	Administrative and support support activities; Repair of computers	42.6	21.9	56.7	25.2	62.6	49.6	75.0	39,5
Total		30.1	53.5	76.7	36.8	32.9	31.4	49.1	36.1

**F6B: During 2019, who performed ICT functions in your enterprise
(external suppliers)**

%

Enterprises		Size class			Region				Total
		Small (10–49)	Medium (50–249)	Large (250+)	Beogradski	Vojvodina	Šumadija i Zapadna Srbija	Južna i Istočna Srbija	
YES									
Activity	Manufacturing	64.0	56.2	47.7	63.0	59.8	74.4	32.8	61,1
	Electricity, gas, steam and air conditioning supply; Water supply and sewerage	67.2	56.1	32.0	9.5	63.6	95.6	34.9	59,3
	Construction	78.2	37.6	52.9	52.3	89.2	72.4	92.1	70,4
	Wholesale and retail trade	52.7	51.4	41.8	25.4	84.6	71.4	52.7	52,3
	Transportation and storage	65.1	74.8	68.7	67.1	53.2	88.1	53.5	66,7
	Accommodation and food service activities	58.1	49.9	66.7	54.3	55.7	74.3	44.0	57,0
	Information and communications	31.5	46.2	61.5	32.1	39.0	64.4	21.4	34,9
	Real estate activities; Professional, scientific and technical activities	49.8	39.2	28.1	42.5	67.0	50.1	40.4	47,9
	Administrative and support support activities; Repair of computers	41.0	51.7	59.2	39.3	49.3	47.1	70.9	44,6
Total		57.9	52.7	48.5	42.9	67.4	74.0	47.5	56.6

MODULE G: Use of 3D printing

G1: During 2019, did your enterprise use 3D printing?

%

Enterprises	Size class			Region				Total
	Small (10–49)	Medium (50–249)	Large (250+)	Beogradski	Vojvodina	Šumadija i Zapadna Srbija	Južna i Istočna Srbija	

Using your enterprise's 3D printers?

Including the use of rented 3D printers.

Activity	Manufacturing	0.2	3.4	5.7	0.7	0.9	0.7	4.4	1,3
	Electricity, gas, steam and air conditioning supply; Water supply and sewerage	-	-	-	-	-	-	-	-
	Construction	-	-	-	-	-	-	-	-
	Wholesale and retail trade	-	2.1	-	-	1.2	-	-	0,3
	Transportation and storage	2.3	4.5	-	-	2.3	-	14.2	2,5
	Accommodation and food service activities	1.1	1.1	-	-	4.8	0.9	-	1,1
	Information and communications	1.9	-	23.1	2.7	-	-	3.8	2,0
	Real estate activities; Professional, scientific and technical activities	-	0.6	15.2	0.4	-	-	1.4	0,4
	Administrative and support support activities; Repair of computers	4.9	-	3.6	1.7	12.7	-	-	3,8
Total		0.6	2.1	4.2	0.5	1.6	0.3	2.9	1.0

Using printing services provided by other enterprises?

Activity	Manufacturing	0.8	1.6	0.7	0.9	-	0.2	4.4	1,0
	Electricity, gas, steam and air conditioning supply; Water supply and sewerage	-	-	-	-	-	-	-	-
	Construction	-	9.2	-	3.8	-	-	-	1,6
	Wholesale and retail trade	-	-	-	-	-	-	-	-
	Transportation and storage	3.7	2.5	2.8	10.5	0.3	-	3.1	3,4
	Accommodation and food service activities	2.0	7.6	-	1.6	8.7	0.9	-	2,7
	Information and communications	1.9	-	23.1	2.7	-	-	3.8	2,0
	Real estate activities; Professional, scientific and technical activities	-	-	-	-	-	-	-	-
	Administrative and support support activities; Repair of computers	4.9	1.2	-	1.2	12.7	2.5	-	3,7
Total		0.9	2.0	1.2	1.6	0.9	0.2	1.9	1.1

G2: During 2019, did your enterprise use 3D printing for any of the following activities?¹⁾

%

Enterprises		Size class			Region				Total
		Small (10–49)	Medium (50–249)	Large (250+)	Beogradski	Vojvodina	Šumadija i Zapadna Srbija	Južna i Istočna Srbija	
Prototypes or models for sale									
Activity	Manufacturing	80.4	52.8	62.5	34.3	79.4	68.4	63.6	62,3
	Electricity, gas, steam and air conditioning supply; Water supply and sewerage	-	-	-	-	-	-	-	-
	Construction	-	-	-	-	-	-	-	-
	Wholesale and retail trade	-	100.0	-	-	100.0	-	-	100,0
	Transportation and storage	61.6	36.0	-	100.0	-	-	17.9	55,8
	Accommodation and food service activities	-	-	-	-	-	-	-	-
	Information and communications	76.9	-	100.0	100.0	-	-	-	82,4
	Real estate activities; Professional, scientific and technical activities	-	100.0	-	-	-	-	100.0	25,7
	Administrative and support support activities; Repair of computers	21.3	-	-	72.7	-	-	-	18,5
Total		53.1	40.3	51.4	56.3	31.5	54.8	48.6	47.7
Prototypes or models for internal use									
Activity	Manufacturing	25.4	53.5	92.1	81.8	100.0	63.8	33.1	51,5
	Electricity, gas, steam and air conditioning supply; Water supply and sewerage	-	-	-	-	-	-	-	-
	Construction	-	-	-	-	-	-	-	-
	Wholesale and retail trade	-	-	-	-	-	-	-	-
	Transportation and storage	38.4	64.0	100.0	-	100.0	-	82.1	44,2
	Accommodation and food service activities	100.0	100.0	-	100.0	100.0	100.0	-	100,0
	Information and communications	100.0	-	-	71.0	-	-	100.0	76,1
	Real estate activities; Professional, scientific and technical activities	-	100.0	100.0	100.0	-	-	100.0	100,0
	Administrative and support support activities; Repair of computers	100.0	100.0	100.0	100.0	100.0	100.0	-	100,0
Total		58.6	42.6	81.2	36.3	82.5	70.9	50.6	54.1

¹⁾ Results refer only to enterprises that said YES in question G1.

G2: During 2019, did your enterprise use 3D printing for any of the following activities?¹⁾ (continued)

%

Enterprises	Size class			Region				Total
	Small (10–49)	Medium (50–249)	Large (250+)	Beogradski	Vojvodina	Šumadija i Zapadna Srbija	Južna i Istočna Srbija	

Goods for sale, excluding prototypes or modes (e.g. moulds, tools, parts of goods, semi-finished goods)

Activity	Manufacturing	5.2	56.7	50.7	16.1	58.8	31.6	44.3	40,8
	Electricity, gas, steam and air conditioning supply; Water supply and sewerage	-	-	-	-	-	-	-	-
	Construction	-	100.0	-	100.0	-	-	-	100,0
	Wholesale and retail trade	-	100.0	-	-	100.0	-	-	100,0
	Transportation and storage	-	100.0	-	-	87.7	-	17.9	18,6
	Accommodation and food service activities	-	-	-	-	-	-	-	-
	Information and communications	76.9	-	100.0	100.0	-	-	-	82,4
	Real estate activities; Professional, scientific and technical activities	-	-	-	-	-	-	-	-
	Administrative and support support activities; Repair of computers	21.3	100.0	-	72.7	-	100.0	-	24,7
Total		11.6	71.4	44.3	42.8	40.7	37.3	34.5	39,3

Goods used in your enterprise's production process, excluding prototypes or models (e.g.moulds, tools, parts of goods, semi-finished goods)

Activity	Manufacturing	91.9	77.1	66.4	38.3	79.4	77.8	88.8	79,7
	Electricity, gas, steam and air conditioning supply; Water supply and sewerage	-	-	-	-	-	-	-	-
	Construction	-	-	-	-	-	-	-	-
	Wholesale and retail trade	-	100.0	-	-	100.0	-	-	100,0
	Transportation and storage	-	-	-	-	-	-	-	-
	Accommodation and food service activities	-	34.8	-	40.7	-	-	-	13,3
	Information and communications	76.9	-	-	71.0	-	-	-	58,5
	Real estate activities; Professional, scientific and technical activities	-	-	42.3	42.3	-	-	-	31,4
	Administrative and support support activities; Repair of computers	100.0	-	100.0	100.0	100.0	-	-	93,8
Total		44,1	48.9	53.3	24.9	61.5	62.4	58.5	46.9

¹⁾ Results refer only to enterprises that said YES in question G1.

MODULE H: Use of robotics

H1: Does your enterprise use any of the following types of robots?

%

Enterprises	Size class			Region				Total
	Small (10–49)	Medium (50–249)	Large (250+)	Beogradski	Vojvodina	Šumadija i Zapadna Srbija	Južna i Istočna Srbija	

Industrial robots (e.g. robotic welding, laser cutting, spray painting, etc.)

Activity	Manufacturing	4.0	15.2	26.1	8.6	8.2	7.0	9.0	8,0
	Electricity, gas, steam and air conditioning supply; Water supply and sewerage	-	-	4.6	2.9	-	-	-	0,4
	Construction	-	1.8	8.3	0.4	-	0.4	2.3	0,5
	Wholesale and retail trade	-	3.0	2.1	1.0	-	-	-	0,4
	Transportation and storage	-	4.5	5.6	-	2.3	-	1.6	0,9
	Accommodation and food service activities	1.1	-	-	-	4.8	-	-	0,9
	Information and communications	2.3	5.3	23.1	2.7	7.8	-	-	3,3
	Real estate activities; Professional, scientific and technical activities	-	3.6	18.1	0.4	3.3	-	-	0,9
	Administrative and support support activities; Repair of computers	-	-	-	-	-	-	-	-
Total		1.2	7.2	15.2	2.1	3.6	3.0	3.6	2.9

Service robots (e.g. used for surveillance, cleaning, transport, etc.)

Activity	Manufacturing	-	1.0	4.2	0.4	1.1	-	0.7	0,5
	Electricity, gas, steam and air conditioning supply; Water supply and sewerage	-	-	-	-	-	-	-	-
	Construction	-	1.8	6.9	0.5	-	-	2.3	0,5
	Wholesale and retail trade	-	-	-	-	-	-	-	-
	Transportation and storage	-	16.2	13.7	10.8	-	-	-	3,0
	Accommodation and food service activities	0.9	-	-	-	3.9	-	-	0,8
	Information and communications	3.3	2.9	-	5.1	-	-	-	3,2
	Real estate activities; Professional, scientific and technical activities	-	-	-	-	-	-	-	-
	Administrative and support support activities; Repair of computers	2.2	-	6.8	0.9	-	-	20.7	2,1
Total		0.3	1.8	4.1	1.2	0.5	-	1.1	0.7

H2: Does your enterprise use service robots for any of the following? ¹⁾

%

Enterprises	Size class			Region				Total
	Small (10–49)	Medium (50–249)	Large (250+)	Beogradski	Vojvodina	Šumadija i Zapadna Srbija	Južna i Istočna Srbija	

Surveillance, security or inspection tasks (e.g. use of autonomous airborne drones, etc.)

Activity	Manufacturing	-	17.0	44.6	50.0	23.1	-	37.5	31,2
	Electricity, gas, steam and air conditioning supply; Water supply and sewerage	-	-	-	-	-	-	-	-
	Construction	-	-	100.0	100.0	-	-	-	37,8
	Wholesale and retail trade	-	-	-	-	-	-	-	-
	Transportation and storage	-	-	29.0	4.7	-	-	-	4,7
	Accommodation and food service activities	-	-	-	-	-	-	-	-
	Information and communications	100.0	100.0	-	100.0	-	-	-	100,0
	Real estate activities; Professional, scientific and technical activities	-	-	-	-	-	-	-	-
	Administrative and support support activities; Repair of computers	100.0	-	-	-	-	-	100.0	74,5
Total		83.8	11.6	40.1	42.7	15.8	-	63.1	41.9

Transportation of people or goods (e.g. use of automated guided vehicles)

Activity	Manufacturing	-	83.0	49.1	100.0	67.7	-	31.3	65,6
	Electricity, gas, steam and air conditioning supply; Water supply and sewerage	-	-	-	-	-	-	-	-
	Construction	-	-	-	-	-	-	-	-
	Wholesale and retail trade	-	-	-	-	-	-	-	-
	Transportation and storage	-	-	-	-	-	-	-	-
	Accommodation and food service activities	100.0	-	-	-	100.0	-	-	100,0
	Information and communications	44.6	100.0	-	53.9	-	-	-	53,9
	Real estate activities; Professional, scientific and technical activities	-	-	-	-	-	-	-	-
	Administrative and support support activities; Repair of computers	-	-	-	-	-	-	-	-
Total		40.1	25.7	23.2	23.7	77.9	-	7.3	30.0

¹⁾ Results refer only to enterprises that said YES in question H1b.

H2: Does your enterprise use service robots for any of the following? (continued)

%

Enterprises		Size class			Region				Total
		Small (10–49)	Medium (50–249)	Large (250+)	Beogradski	Vojvodina	Šumadija i Zapadna Srbija	Južna i Istočna Srbija	
Cleaning or waste disposal tasks									
Activity	Manufacturing	-	-	35.7	100.0	-	-	-	18,3
	Electricity, gas, steam and air conditioning supply; Water supply and sewerage	-	-	-	-	-	-	-	-
	Construction	-	-	-	-	-	-	-	-
	Wholesale and retail trade	-	-	-	-	-	-	-	-
	Transportation and storage	-	-	-	-	-	-	-	-
	Accommodation and food service activities	100.0	-	-	-	100.0	-	-	100,0
	Information and communications	44.6	-	-	37.1	-	-	-	37,1
	Real estate activities; Professional, scientific and technical activities	-	-	-	-	-	-	-	-
	Administrative and support support activities; Repair of computers	-	-	100.0	100.0	-	-	-	25,5
Total		40.1	-	33.0	23.5	31.6	-	-	20.5
Warehouse management systems (e.g. palletising, handling goods, etc.)									
Activity	Manufacturing	-	100.0	73.2	100.0	76.9	-	100.0	86,2
	Electricity, gas, steam and air conditioning supply; Water supply and sewerage	-	-	-	-	-	-	-	-
	Construction	-	-	-	-	-	-	-	-
	Wholesale and retail trade	-	-	-	-	-	-	-	-
	Transportation and storage	-	100.0	100.0	100.0	-	-	-	100,0
	Accommodation and food service activities	-	-	-	-	-	-	-	-
	Information and communications	44.6	-	-	37.1	-	-	-	37,1
	Real estate activities; Professional, scientific and technical activities	-	-	-	-	-	-	-	-
	Administrative and support support activities; Repair of computers	-	-	-	-	-	-	-	-
Total		23.8	82.7	59.4	69.6	52.6	-	23.3	58.0

H2: Does your enterprise use service robots for any of the following? (continued)

%

Enterprises		Size class			Region				Total	
		Small (10–49)	Medium (50–249)	Large (250+)	Beogradski	Vojvodina	Šumadija i Zapadna Srbija	Južna i Istočna Srbija		
Assembly work performed by service robots										
Activity	Manufacturing	-	-	31.3	50.0	-	-	31.3	16,1	
	Electricity, gas, steam and air conditioning supply; Water supply and sewerage	-	-	-	-	-	-	-	-	
	Construction	-	-	-	-	-	-	-	-	
	Wholesale and retail trade	-	-	-	-	-	-	-	-	
	Transportation and storage	-	-	-	-	-	-	-	-	
	Accommodation and food service activities									
	Information and communications	44.6	-	-	37.1	-	-	-	37,1	
	Real estate activities; Professional, scientific and technical activities	-	-	-	-	-	-	-	-	
	Administrative and support support activities; Repair of computers	-	-	-	-	-	-	-	-	
Total		23.8	-	14.7	15.2	-	-	7.3	11.1	
Robotic store clerk tasks										
Activity	Manufacturing	-	-	17.9	50.0	-	-	-	9,2	
	Electricity, gas, steam and air conditioning supply; Water supply and sewerage	-	-	-	-	-	-	-		
	Construction	-	-	-	-	-	-	-	-	
	Wholesale and retail trade	-	-	-	-	-	-	-	-	
	Transportation and storage	-	-	-	-	-	-	-	-	
	Accommodation and food service activities	-	-	-	-	-	-	-	-	
	Information and communications	44.6	-	-	37.1	-	-	-	37,1	
	Real estate activities; Professional, scientific and technical activities	-	-	-	-	-	-	-	-	
	Administrative and support support activities; Repair of computers	-	-	-	-	-	-	-	-	
Total		23.8	-	8.4	15.2	-	-	-	9.8	

H2: Does your enterprise use service robots for any of the following? (continued)

%

Enterprises		Size class			Region				Total
		Small (10–49)	Medium (50–249)	Large (250+)	Beogradski	Vojvodina	Šumadija i Zapadna Srbija	Južna i Istočna Srbija	
Construction works or damage repair tasks									
Activity	Manufacturing	-	54.7	17.9	50.0	30.8	-	37.5	35,8
	Electricity, gas, steam and air conditioning supply; Water supply and sewerage	-	-	-	-	-	-	-	-
	Construction	-	100.0	-	-	-	-	100.0	62,2
	Wholesale and retail trade	-	-	-	-	-	-	-	-
	Transportation and storage	-	-	-	-	-	-	-	-
	Accommodation and food service activities	100.0	-	-	-	100.0	-	-	100,0
	Information and communications	44.6	-	-	37.1	-	-	-	37,1
	Real estate activities; Professional, scientific and technical activities	-	-	-	-	-	-	-	-
	Administrative and support support activities; Repair of computers	-	-	-	-	-	-	-	-
Total		40.1	20.9	8.4	15.2	52.6	-	31.1	24.6

QUESTIONNAIRE





The data in this questionnaire are confidential and shall be used for statistical purposes only
(Law on Official Statistics, „Official Gazette of the RS“, number 104/09)

SURVEY ON ICT USAGE IN ENTERPRISES

MODULE A: ACCESS AND USE OF THE INTERNET

A1	Please indicate an estimate of the persons who use the Internet for business purposes:	%	
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Use of fixed broadband Internet for business purposes

A2	Does your enterprise use any fixed broadband Internet connection? (e.g. ADSL, SDSL, FTTP, cable Internet, public Wi-Fi)	Yes	No
			→ Go to A5

A3	What is the maximum contracted speed of the Internet connection in your enterprise? (tick only one)	Yes	No
a) Less than 30 Mbit/s			
b) At least 30, but less than 100 Mbit/s			
c) At least 100, but less than 500 Mbit/s			
d) At least 500, but less than 1 Gbit/s			
e) At least 1 Gbit/s			
A4	Is the contracted speed of the fixed broadband Internet connection sufficient for the real needs of your enterprise?	Yes	No

Use of a mobile connection to the Internet for business purposes

A5	Does your enterprise provide portable devices that allow a mobile connection to the Internet using mobile telephone networks, for business purposes? (via portable computers or other portable devices such as smartphones)	Yes	No
			→ Go to A7

A6	Please, indicate an estimate of the percentage of employees who use a portable device (provided by the enterprise) that allows Internet connection via mobile telephone networks, for business purposes (portable computer, tablet, smartphone):	%	
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Use of a website

A7	Does your enterprise have a website?	Yes	No
			→ Go to A9

A8	Does the website of your enterprise have any of the following services?	Yes	No
	a) Description of goods or services, pricelist		
	b) Online ordering or reservation or booking of goods/services		
	c) Possibility for visitors to customize or design online goods or services		
	d) Tracking or status of orders placed		
	e) Personalised content on the website for regular/recurrent customers		
	f) Links or references to the enterprise's social media profiles (Facebook, Twitter)		
A9	Does your enterprise have a chat service (i.e. service for exchange of messages with customers)?	Yes	No
	a) Chat service where a person replies to customers		
	b) Chatbot or a virtual agent replying to customers		

MODULE B: E-COMMERCE

E-commerce is the sale or purchase of goods or services conducted over computer networks by methods specifically designed for the purpose of receiving or placing orders. The payment and the delivery of the goods or services do not have to be conducted online. **E-commerce transactions** exclude **orders made by manually typed e-mail messages**.

B1	During 2019, did your enterprise have web sales of goods via?	Yes	No
	a) your enterprise website or mobile application? (including extranets)		
	b) e-commerce marketplace websites or applications used by several enterprises for trading goods or services? (Amazon, Alibaba, Limundo, Tehnomanija)		
If the answer is „No“ both under a) and b)-> go to B7			
B2	What was the percentage of your total web sales in 2019?	%	
B3	What was the percentage of web sales in 2019 for the following:	Total 100%	
	a) via your enterprise website or mobile application (including extranet)		%
	b) via e-commerce marketplace websites or applications used by several enterprises trading goods or services? (Amazon, Alibaba, Limundo, Tehnomanija)		%
B6	What was the percentage of the value of web sales in 2019, by type of transaction:	Total 100%	
	a) Sales to final consumers (B2C)		%
	b) Sales of other enterprises (B2B) and sales to government bodies (B2G)		%
EDI-type sales			
EDI-type sales are sales made via electronic data interchange. This type of sale means that it is in an agreed or standard format suitable for automated processing (e.g. EDI-EDIFACT, XML-UBL.); Without the individual messages being typed manually.			
B7	During 2019, did your enterprise receive orders for goods or services placed via EDI-type messages?	Yes	No
			→ Go to C1

B8	What was the percentage of the total turnover resulting from orders for goods or services placed via EDI-type messages, during 2019?	%	
MODULE C: INVOICING			
<p>There are electronic invoices and invoices in paper form. There are two types of electronic invoices:</p> <ul style="list-style-type: none"> -e-invoices in a standard structure (suitable for automated processing, excluding PDF files) – such invoices may be exchanged directly between suppliers and customers, via service operator or via an electronic banking system; -invoice sent electronically, not suitable for automated processing (excluding transmission of PDF files). 			
C1	During 2019, did your enterprise send any of the following types of invoices : (including manually typed invoices via intermediaries, e.g. accountants, e-invoices of service providers, etc.)	Yes	No
a) electronic invoices in a standard structure suitable for automated processing <i>EDI</i> (e.g. <i>EDIFACT</i>), <i>XML</i> (e.g. <i>UBL</i>), excluding transmission of PDF files?			
b) invoices sent electronically, not suitable for automated processing (e.g. e-mails, <i>JPEG</i> or other formats), including transmission of PDF files			
c) Invoices in paper form			
MODULE D: USE OF CLOUD COMPUTING SERVICES			
<p>Cloud services refer to ICT services that are used over the Internet to access software, computer storage, etc. The services have the following characteristics:</p> <ul style="list-style-type: none"> -they are on servers of service providers; -they may be easily increased or decreased (e.g. the number of users or change of storage capacity) -they may be used on user's demand, at least after the first uploading (without human interaction with the service provider); -they are paid based on way of use, capacity or they are paid in advance <p>Cloud services may include connections via virtual private networks (VPN).</p>			
D1	Does your enterprise pay cloud computing services over the Internet?	Yes	No
			→ Go to E1
D2	Does your enterprise pay any of the following computing services used over the Internet?	Yes	No
a) e-mail (as a cloud computing service)			
b) Office software (text processing and tables, e.g. <i>word</i> , <i>excel</i>) (as a cloud computing service)			
c) Hosting the enterprise databases (as a cloud computing service)			
d) Storage of files (as a cloud computing service)			
e) Software applications for finances and accounting (as a cloud computing service)			
f) Software applications for customer relationship management (CRM) for managing information about customers (as a cloud computing service)			
g) Computer power to run the enterprise's own software (as a cloud computing services)			

MODULE E: BIG DATA ANALYSIS

Big data analysis has the following characteristics:

-Volume: enormous amount of data.

-Variety: different formats of complex data (e.g. text, video, voice, sensor data, activity logs, coordinates).

- Velocity: data are generated frequently.

Big data analysis refers to the use of technology, technics or software tool such as data or *text mining*, machine learning, etc. for Big data analysis extracted from your enterprise's data source or other data sources.

E1	During 2019, did your enterprise perform a Big data analysis on any of the following data sources? (Please, exclude Big data analysis conducted by external service providers)	Yes	No
	a) Data from smart devices or sensors (e.g. machine-to-machine M2M-communications, digital sensors, Radio Frequency Identification RFID, etc.)		
	b) Geolocation data from the use of portable devices (e.g. portable devices using mobile telephone networks, wireless connections or GPRS)		
	c) Data generated from social media (e.g. social networks, blogs, multimedia content exchange websites, etc.)		
	d) Other big data sources not specified above, e.g. stock index data, transaction data, other open web data		

→ If the answer is „Yes“ to at least one of the proposed answers from a) to d) in question

E1 go to E2

E2	During 2019, did your enterprise use any of the following methods to analyse big data?		
	a) Machine learning (e.g. deep learning) Including „training“ a computer model to better perform an automated task, e.g. pattern recognition.		
	b) Natural language processing, natural language generation or speech recognition <i>NLP</i> , <i>NLG</i> and speech recognition (ability for a computer program to understand human language as it is spoken, to convert data into natural language representation or to recognize words and phrases in spoken language and convert them to a machine readable format)		
	c) Other methods of big data analysis		

E3	During 2019, did your enterprise have another enterprise or organisation perform big data analysis for your enterprise?	Yes	No

Questions E6 and E7 are to be presented only to respondents who answered „Yes“ to at least one of the options in questions E1 or E3.

E6	During 2019, did your enterprise sell (access) any of its big data analysis? e.g. big data from smart devices or sensor of your enterprise, big data on your enterprise's customers.	Yes	No
E7	During 2019, did your enterprise purchase (access) any of its big data analysis ? e.g. big data from smart devices or sensor of other enterprises, big data on customers of other enterprises.	Yes	No

MODULE F: ICT SPECIALISTS AND SKILLS

F1	Does your enterprise employ ICT specialists? (ICT specialists are employees for whom ICT is the main job . For example, to maintain and develop ICT systems, or operate applications)	Yes	No
F2	During 2019, did your enterprise provide any type of training to develop ICT related skills of the persons employed?	Yes	No
	a) Training for ICT specialists (tick „No“ if your enterprise did not employ ICT specialists during 2019)		
	b) Training for other persons employed		
F3	During 2019, did your enterprise recruit or try to recruit ICT specialists?	Yes	No
			→ Go to F6
F4	During 2019, did your enterprise have vacancies for ICT specialists that were difficult to fill?	Yes	No
			→ Go to F6
F5	During 2019, did your enterprise any of the following difficulties to recruit ICT specialists?	Yes	No
	a) Lack of applications		
	b) Lack of relevant applications of ICT related qualifications from ICT education and/or training		
	c) Applicants' lack of relevant experience		
	d) Applicants' salary expectations too high		
F6	During 2019, who performed ICT functions in your enterprise? (e.g. maintenance of ICT structure; support for office software; development or support for business management software, web solutions; security and protection of data)	Yes	No
	a) Own employees (including employees in parent or affiliate enterprises)		
	b) External suppliers		

MODULE G: USE OF 3D PRINTING

Use of 3D printing additive layer manufacturing refers to the use of special printers either by the enterprise itself or the use of 3D printing services provided by other enterprises for the creation of three-dimensional physical objects using digital technology.

G1	During 2019, did your enterprise use 3D printing :	Yes	No
	a) Using your enterprise's 3D printers? (Including the use of rented 3D printers)		
	b) Using printing services provided by other enterprises?		
The following questions are to be asked if the answer in G1 a) or G1 b) is „Yes“. If „No“ is in both options of questions G1 a) and b) , the respondent should be directed to question H1.			

G2	During 2019, did your enterprise use 3D printing for any of the following activities?	Yes	No
	a) Prototypes of models for sale		
	b) Prototypes or models for internal use		
	c) Goods for sale, excluding prototypes or models (e.g. moulds, tools, parts of goods, semi-finished products)		
	d) Goods used in your enterprise's production process, (e.g. moulds, tools, parts of goods, semi-finished products)		

MODULE H: USE OF ROBOTICS

- An industrial robot is an automatically controlled, reprogrammable, multipurpose manipulator programmable in three or more axes, which may be either fixed in place or mobile for use. Most existing industrial robots are based on the robot arm with a solid base and a series of links and joints with an end effector that carries out the task.

- A service robot is a machine that has a degree of autonomy that enables it to operate in complex and dynamic environment that may require interaction with persons, objects or other devices, excluding its use in industrial automation applications. They are designed to fit their tasks, working in the air (e.g. as a drone), under water, or on land, using wheels or legs to achieve mobility with arms and end effectors to physically interact and are often used in inspection and maintenance tasks.

Software robots (computer programs) and 3D printers are out of the scope of the following questions.

H1	Does your enterprise use any of the following types of robots?	Yes	No
	a) Industrial robots (e.g. robotic welding, laser cutting, spray painting, etc.) (Please, see the definition of industrial robots)		
	b) Service robots (e.g. used for surveillance, cleaning, transport, etc.) (Please, see the definition of service robots)		
If the answer in H1 b) is „Yes“ go to question G2; otherwise the interview ends.			
H2	Does your enterprise use service robots for any of the following? (Please, see the definition of service robots when considering the relevant tasks mentioned below)	Yes	No
	a) Surveillance, security or inspections tasks (e.g. use of autonomous airborne drones, etc.)		
	b) Transportation of people or goods (e.g. use of automated guided vehicles, etc.)		
	c) Cleaning or waste disposal tasks		
	d) Warehouse management systems (e.g. palletising, handling goods, etc.)		
	e) Assembly works performed by service robots		
	f) Robotic store clerk task		
	g) Construction works or damage repair tasks		

ICT GLOSSARY



ADSL (Asymmetric Digital Subscriber Line):

A broadband digital transmission technology that uses the existing telephone line and provides for possible simultaneous data sending and voice communication. The larger part of range serves for data sending to user and the speed extends up to 6 Mbps.

Bit (Binary Digit):

The smallest information unit that a computer handles. A bit is expressed as 1 or 0 in binary presentation, or as true, i.e. false in logic presentation. A group of 8 bits makes 1 byte.

Broadband:

A communication system the agent (carrier) of which (e.g. optical cable) forwards multiplied data simultaneously, and each individual data is made module at different frequency.

B2B (Business-to-Business):

Transactions between two enterprises that are carried out by the way of networks based on IP (*Internet Protocol Address*) and through other computer networks.

B2C (Business-to-Customer):

Transactions between a business and private customer that are carried out through other computer networks.

CRM (Customer Relationship Management):

It is a process or methodology that helps managing information about our clients' needs and habits and developing tighter relationships with them. CRM contains several technological components, but in organizational terms, CRM represents a set of processes for collecting necessary information on customers, sales, marketing efficiency, customers' reactions and market trends. CRM helps managing technologies and human resources in order to have a view of customers' behavior and value.

Download:

Electronic transmission of information from a remote computer to your computer. Downloading of data files from anonymous FTP (*File Transfer Protocol*) is a popular way of obtaining free of charge software of public property

Dial-up connection:

Use of a telephone network for the purpose of connecting to another network. Included are modem and regular telephone line, ISDN (*Integrated Services Digital Network*) card and ISDN line, etc. If you are a typical computer user, you have one or two dial-up connections: one for the link to the Internet and another for the link to the network at your enterprise.

DSL (Digital Subscriber Line):

A type of fast Internet connection that utilizes standard telephone lines. It could also be a type of *broadband* connection.

xDSL, ADSL itd.:

Transmissions via the Internet networks based on protocols and via other computer networks. Goods and services are ordered over those networks, but payments and final delivery of goods or services can be carried out on/outside the off-line network. Orders received by telephone, fax or e-mail do not fall into this category of e-commerce.

Digital goods or services:

Goods/services that can be ordered or delivered directly via a computer over the Internet, e.g. films, games, computer software, “on-line” newspapers, consulting services, etc.

E-mail:

Electronic transmission of messages, including text and attachments, between computers located inside or outside an organization. This comprises electronic mails over the Internet or other computer networks.

Extranet:

A secure extension of Intranet enabling external users to have access to certain parts of the organization Intranet.

Electronic commerce:

E-Commerce (Electronic Commerce) is the purchase or selling of goods or services over the Internet particularly via the World Wide Web service. Practically this term is often used instead of the recent one, e-business, which means business over the Internet.

Electronic (digital) signature:

Electronic signature is meant to be a technology used in systems of electronic business for checking the signatory's authenticity, securing the integrity of transmitted information and the irrevocability of the electronic signature in the message or document. Therefore, alike the signature in standard business, the electronic signature is used in electronic business. Besides, the latter secures electronically signed messages, which is not the case with personal signatures.

ERP (Enterprise Resource Planning):

ERP is a software system that monitors all the aspects of business operations of a company. The implemented ERP system is able to integrate business operations of different company functions (e.g. accountancy, sales, production, etc.) in one entity. One obtains this way a system through which one can, on one hand, manage all human and material resources, and on the other one, develop and monitor business processes and procedures.

Firewall:

A combination of hardware and software keeping the system secure. It is usually used to prevent any unauthorized access to the internal local network from the outside. Firewall prevents direct communication between a network and external computers.

Hardware:

A physical unit of a computer system, including external units, printers, modems, mice, etc.

Internet:

World computer network.

Internet address:

Address of one of the Internet resources. It typically reads for example: <http://www.stat.gov.rs>

Intranet:

A network inside an organization based on Internet technologies and protocols, but being only available to a specific group of persons, e.g. the employees.

ISDN (Integrated Services Digital Network):

A fast digital telephone service which speed ranges up to 128 Kbps, which is several times faster than the analogous modem.

Local Area Network (LAN):

A local network that covers and connects a group of computers, printers and other units within a relatively limited location (e.g. building). Every connected LAN units is allowed to communicate with other networks, if needed.

Network:

A group of computers or other devices, such as printers, scanners, etc., being connected to the communication link, which enables all the devices to interact. It can be of small or large range, linked with cables, wireless, permanently, temporary linked, ... The largest network is the Internet, the largest group of all interconnected world networks.

Server:

A computer, in a network environment, having shared resources and used by network users.

Virus:

A computer program, which, by being started-up and installed, damages or erases data in a computer.

Wide Area Network (WAN):

A communication network that links geographically remote computers, printers and other devices.

Window:

A part of a screen from which programs and processes can be started-up. Users can start-up several "windows" at the same time.

Dissemination and public relations group

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Pages: 139

