



INNOVATION ACTIVITIES IN ENTERPRISES, 2018 – 2020

In the period from 2018 to 2020, almost half (49.5%) of the observed enterprises in the Republic of Croatia were innovative

The presented data are the outcome of the survey on innovation activities in enterprises in the period from 2018 to 2020 carried out on a sample of 4 500 enterprises. According to this survey, innovative enterprises are defined as enterprises that introduced a product (good or service) or a process innovation in the observed period.

The share of innovative enterprises grows with the enterprise size. A total of 46.6% of small enterprises were innovative, 61.3% of medium-sized and 79.4% of large ones. Industrial enterprises had the largest share in innovation activities (53.9%), while 47.1% of service enterprises were innovative.

Innovative enterprises generated 70.1% of the total turnover of all observed enterprises in 2020. This trend is also noticeable among persons in employment, as 66.6% of all persons in employment in 2020 were employed in innovative enterprises. Observing by the size of innovative enterprises, the largest share in the total turnover of enterprises was generated by large enterprises (88.6%), medium-sized enterprises generated 66.8%, while small enterprises generated 47.2%.

As regards the type of innovation, the most frequent was process innovation (introduced by 17.2% of all enterprises), while product innovation only was introduced by 5.5% of all enterprises. Large enterprises were the most represented enterprises in the introduction of process innovation (23.2%), while medium-sized enterprises were the most represented enterprises in the introduction of product innovation (6.8%).

Expenditure on innovation was incurred by 33.2% of enterprises, of which the most frequent was expenditure on innovation activities (incurred by 12.3% of enterprises), while a smaller number of enterprises incurred expenditure on R&D performed in-house (9.2%) and on external R&D (5.0%).

Enterprises most frequently developed product innovation (20.2%) and process innovation (30.2%) on their own, while a smaller number of enterprises developed product innovation (9.9%) and process innovation (14.0%) together with other enterprises or institutions.

The most frequent hampering factors for innovation were too high costs (24.0%), lack of internal finance for innovation (20.1%) and lack of skilled employees within enterprise.

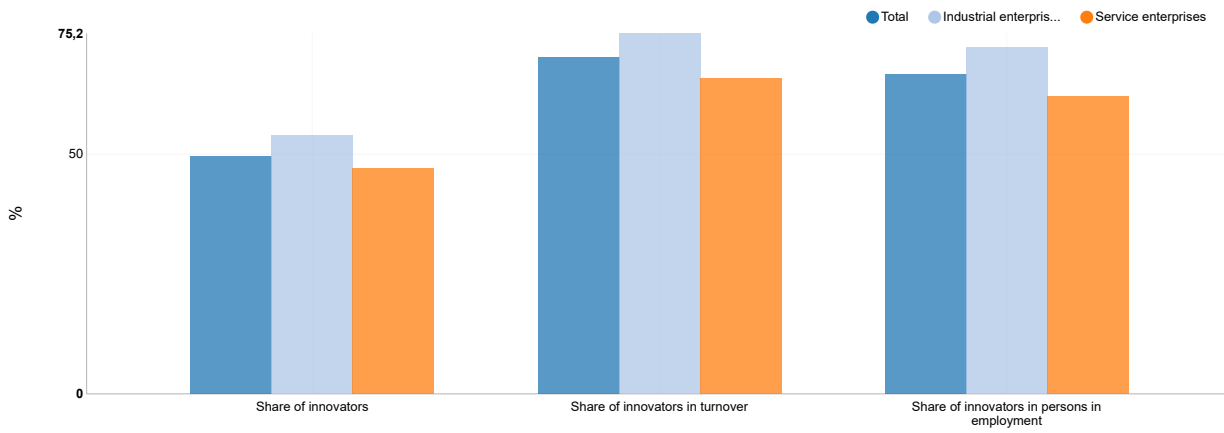
1 ENTERPRISES, BY INNOVATION PERFORMANCE, ACTIVITY AND SIZE, 2018 – 2020¹⁾

	Total	Innovators	Non-innovators	Share of innovators, %	Share of innovators in turnover ²⁾ , %	Share of innovators in persons in employment ²⁾ , %
Total	11 384	5 632	5 752	49,5	70,1	66,6
Industrial enterprises	4 048	2 180	1 868	53,9	75,2	72,2
Service enterprises	7 336	3 453	3 884	47,1	65,9	62,0
Small enterprises	9 534	4 441	5 092	46,6	47,2	47,7
Medium-sized enterprises	1 541	945	596	61,3	66,8	63,0
Large enterprises	310	246	64	79,4	88,6	84,4

1) Due to the rounding, the total sum may sometimes differ from the sum obtained by adding up of individual items.

2) Data refers to 2020.

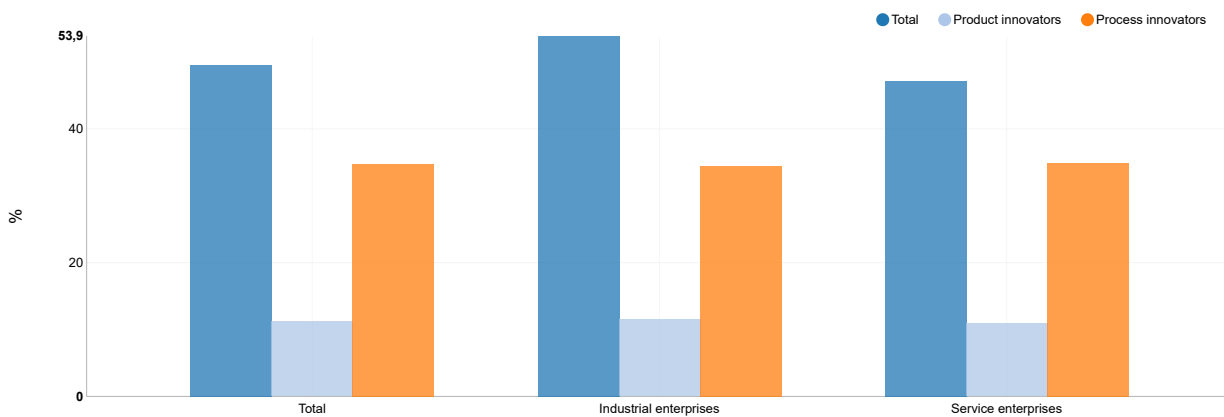
G-1 SHARE OF INNOVATIVE ENTERPRISES IN TURNOVER AND PERSONS IN EMPLOYMENT, BY ACTIVITY, 2018 – 2020



2 ENTERPRISES, BY TYPE OF INNOVATION, ACTIVITY AND SIZE, 2018 – 2020

	Total	Innovators		
		Innovators total, %	Product innovators only, %	Process innovators only, %
Total	11 384	49,5	5,5	17,2
Industrial enterprises	4 048	53,9	6,2	18,6
Service enterprises	7 336	47,1	5,2	16,4
Small enterprises	9 534	46,6	5,3	16,2
Medium-sized enterprises	1 541	61,3	6,8	22,1
Large enterprises	310	79,4	5,2	23,2

G-2 INNOVATIVE ENTERPRISES, BY TYPE OF INNOVATION AND ACTIVITY, 2018 – 2020



3 ENTERPRISES WITH INNOVATION EXPENDITURE, BY TYPE OF INNOVATION EXPENDITURE, ACTIVITY AND SIZE, 2020

	Total	Enterprises with innovation expenditure			
		Total, %	Type of innovation expenditure		
			R&D performed in-house, %	External R&D, %	Other innovation expenditure, %
Total	11 384	33,2	9,2	5,0	12,3
Industrial enterprises	4 048	43,3	13,1	7,3	17,6
Service enterprises	7 336	26,9	7,1	3,7	9,4
Small enterprises	9 534	29,9	7,6	3,6	10,9
Medium-sized enterprises	1 541	40,6	14,1	9,0	17,3
Large enterprises	310	64,2	34,2	26,1	30,6

4 INNOVATIVE ENTERPRISES THAT DEVELOPED PRODUCT OR PROCESS INNOVATION BY ITSELF OR TOGETHER WITH OTHER ENTERPRISES OR INSTITUTIONS, BY ACTIVITY AND SIZE, 2018 – 2020

	Total	Product innovation		Process innovation		By itself or together with other enterprises or institutions, %
		By itself, %	Together with other enterprises or institutions, %	On their own, %	Together with other enterprises or institutions, %	
Total	11 384	20,2	9,9	30,2	14,0	41,8
Industrial enterprises	4 048	24,2	10,3	33,7	14,2	46,3
Service enterprises	7 336	2,4	1,4	5,5	1,7	7,0
Small enterprises	9 534	19,1	8,2	28,9	11,7	39,3
Medium-sized enterprises	1 541	23,5	14,9	34,7	21,9	51,4
Large enterprises	310	36,5	36,5	49,0	43,9	71,0

5 HAMPERING FACTORS FOR INNOVATION, BY THE DEGREE OF IMPORTANCE, 2018 – 2020

Hampering factors of "high importance"	As % of all enterprises
Costs too high	24,0
Lack of internal finance for innovation	20,1
Lack of skilled employees within enterprise	17,3
Difficulties in obtaining public grants or subsidies	15,8
Different priorities within enterprise	15,2
Lack of credit or private equity	14,1
Too much competition in the market	12,2
Uncertain market demand for ideas for innovations	10,2
Lack of collaboration partners	8,7
Lack of access to external knowledge	7,3

NOTES ON METHODOLOGY

Data sources

Data are the outcome of the processed survey on innovation activities of enterprises in the period from 2018 to 2020 carried out on the sample of 4 500 enterprises – legal entities and natural persons. The survey was conducted by the Croatian Bureau of Statistics and was completely harmonised with the Community Innovation Survey, which is conducted in the European Union every two years.

Coverage and comparability

The basic group for the statistical survey on innovation activities of enterprises in the period from 2018 to 2020 was extracted from the Statistical Business Register of the Croatian Bureau of Statistics (situation as at the end of 2020) and contained 11 477 units (10 242 legal entities and 1 235 craftsmen) employing 10 or more persons and with a prevailing activity classified among the following:

Division	Description
05 – 09	Mining and quarrying
10 – 33	Manufacturing
35	Electricity, gas, steam and air conditioning supply
36 – 39	Water supply; sewerage, waste management and remediation activities
46	Wholesale trade, except of motor vehicles and motorcycles
49 – 53	Transportation and storage
58 – 63	Information and communication
64 – 66	Financial and insurance activities
71	Architectural and engineering activities; technical testing and analysis
72	Scientific research and development
73	Advertising and marketing research
41 – 43	Construction
55 – 56	Accommodation and food service activities
68	Real estate activities

The basic group was stratified by activity (at the NKD 2007. classification level, with additional breakdown of division 35 Electricity, gas, steam and air conditioning supply at the NKD group level) and size classes according to the number of persons in employment.

Size classes are as follows:

10 – 49	persons in employment – small enterprises
50 – 249	persons in employment – medium-sized enterprises
250 +	persons in employment – large enterprises.

The sample for the survey on innovation activities of enterprises in the period from 2018 to 2020 included all medium-sized and large enterprises in the basic group as well as a stratified random sample of small enterprises. The sample allocation to strata was proportional to the square root of the total number of units in each single strata of the target population, the so-called square-root allocation. The proportional allocation was partially disrupted due to the fact that the number of units in the sample in the strata of enterprises engaged in the activities Construction, Accommodation and food service activities, Manufacture of food products and Wholesale trade was cut down in relation to the number that had previously been calculated in order to reduce otherwise large representation of the said activities in the sample and to increase the number of sample units in other strata.

In the strata where the sample was bigger than the population, the sample size equalled the population size; in the strata where the calculated sample size was smaller than 6 and the population size less than 6, the sample equalled population, while if the population size was 6 or more, the sample size was 6.

The final sample size was 4 500 enterprises – legal entities and natural persons.

The response rate of enterprises that filled in the questionnaire was 75.4%.

The data are comparable to data from the previous wave of surveys. They are not comparable with data from previous periods due to changes in methodology (in the definition of innovation) that occurred in the last wave of surveys (2016 – 2018).

The statistical classification of activities used in this survey was the National Classification of Activities – NKD 2007.

The following table shows estimates, standard estimation errors, confidence intervals (95%) and variation coefficients for the share of innovative enterprises by size and activity.

	Share of innovative enterprises			
	Estimate	Standard estimation error	Confidence interval	Variation coefficient
Total	49.5%	0.7%	48.0% : 50.9%	1.5%
By size				
Small	46.6%	0.9%	44.9% : 48.3%	1.9%
Medium-sized	61.3%	0.8%	59.7% : 63.0%	1.4%
Large	79.5%	0.7%	78.1% : 81.0%	0.9%
By activity				
Industrial	53.9%	1.2%	51.6% : 56.2%	2.2%
Service	47.1%	1.0%	45.1% : 49.0%	2.1%

Definitions and explanations

Innovative enterprises are all business entities that introduced a new or improved product or process (or their combination) in the period from 2018 to 2020, which significantly differs from previous products or business processes in the enterprise and was introduced to the market (product) or started to be applied in the enterprise (process). Product innovation must be available to potential customers, but it does not necessarily affect sales. Business process innovation is introduced when an enterprise starts using it continuously in its operations (business activities).

Product innovation is a new or improved good or service introduced to the market, which differs significantly from the enterprise's previous goods or services. Products include tangible objects and digital products, as well as software. Services are intangible activities that are produced and consumed at the same time, e.g. retail, banking services, hotel accommodation, insurance, educational courses, air transport, consulting services, etc. Product innovation **includes** significant changes in the design of a good or service and digital products or services. It **excludes** pure resale of new products and services and aesthetic changes.

Business process innovation is a new or improved business process introduced in an enterprise for one or more business functions, which differs significantly from the enterprise's previous business processes.

Innovation activity includes all development, financial and commercial activities that an enterprise undertakes with the intention of developing or introducing an innovation.

Product innovators are enterprises that introduced a product and/or service innovation in the period from 2018 to 2020.

Process innovators are business entities that introduced a business process innovation in the period from 2018 to 2020.

Industrial activities in this survey are as follows: Mining and quarrying (05 – 09), Manufacturing (10 – 33), Electricity, gas, steam and air conditioning supply (35) and Water supply; sewerage, waste management and remediation activities (36 – 39).

Service activities in this survey are as follows: Construction* (41 – 43), Wholesale trade, except of motor vehicles and motorcycles (46)*, Transportation and storage (49 – 53), Accommodation and food service activities* (55 – 56), Information and communication (58 – 63), Financial and insurance activities (64 – 66), Real estate activities* (68), Architectural and engineering activities; technical testing and analysis (71), Scientific research and development (72), Advertising and marketing research (73).

Activities marked with an asterisk are included in the analysis of innovation activities because of their significance in the Croatian economy.

Small enterprises are enterprises employing 10 to 49 persons.

Medium-sized enterprises are enterprises employing 50 to 249 persons.

Large enterprises are enterprises employing 250 and more persons.

Research and development (R&D) comprise creative and systematic work undertaken in order to increase the stock of knowledge – including knowledge of humankind, culture and society – and to devise new applications of available knowledge.

In-house R&D includes the R&D activities undertaken by an enterprise to create new knowledge or solve scientific or technical issues (including software development within the enterprise). It also includes current expenditures, labour costs and capital expenditure on buildings and equipment specifically for R&D.

External R&D includes the same activities as in the above definition, which are contracted-out to other enterprises (including other enterprises within its own enterprise group) or to public or private research institutions.

Other innovation expenditure includes the acquisition of machinery equipment, software, intellectual property rights or buildings for innovation activities other than R&D; the acquisition of external knowledge for innovation activities other than R&D (e.g. patents, licenses, trademarks); product or service design, and the preparation of production/distribution for innovation activities other than R&D; employee training and professional development for innovation activities other than R&D (e.g. employee training or continued education); marketing of innovations (marketing activities directly related to innovations, including market research).

Abbreviations

NKD 2007. National Classification of Activities, 2007 version
R&D research and development

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