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INNOVATION ACTIVITIES IN ENTERPRISES, 2020 – 2022

In the period from 2020 to 2022, slightly more than a third (36.4%) 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 2020 to 2022 carried out on a sample of 4 198 enterprises (5 115 legal units). 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 33.7% of small enterprises, 45.6% of medium-sized enterprises and 68.4% of large enterprises were innovative. Industrial enterprises had the largest share in innovation activities, namely 39.1% of them, while 35.0% of service enterprises were innovative.

Innovative enterprises generated 65.9% of the total turnover of all observed enterprises in 2022. This trend is also noticeable among persons in employment, as 57.1% of all persons in employment in 2022 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 (85.0%), while the share in the total turnover of medium-sized enterprises was 62.3% and of small enterprises it was 40.4%.

Expenditure on innovation was incurred by 24.5% of enterprises, of which the most frequent was expenditure on innovation activities (incurred by 9.5% of enterprises), while a smaller number of enterprises incurred expenditure on research and development activities performed in-house (9.3%) and on external research and development services (5.7%).

Enterprises most frequently developed product innovations (9.7%) and process innovations (25.6%) by themselves, while a smaller number of enterprises developed product innovations (6.5%) and process innovations (10.3%) together with other enterprises or institutions. The majority of enterprises, 31.9% of them to be precise, developed innovations in both ways, by themselves and in cooperation with other enterprises or institutions.

There were 42.5% of innovative enterprises that received some kind of public financial support, while 31.0% of them used it either for research and development activities or other innovation activities.

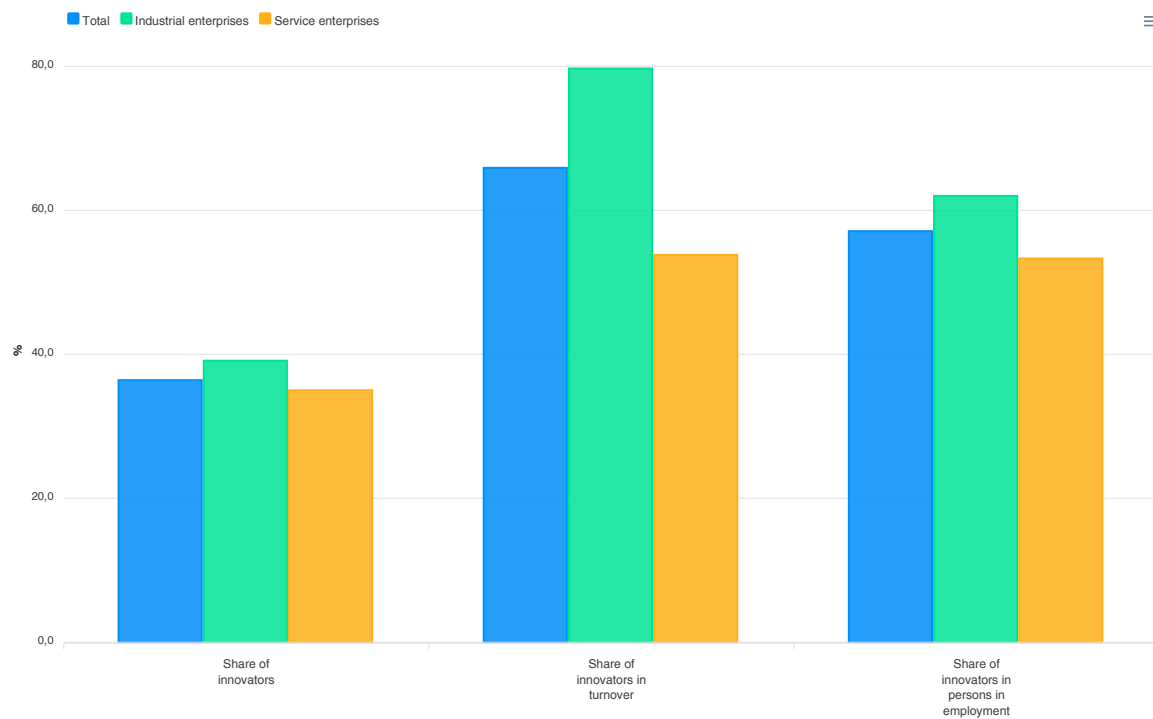
Regarding the cooperation of innovative enterprises on innovation activities with partners according to geographical location, there was most cooperation with partners from Croatia, both inside and outside the business sector of the enterprises. There were 19.7% of innovative enterprises that collaborated on innovation activities with partners from the business sector in Croatia, 14.3% of those that collaborated with partners from the remaining EU or EFTA countries and 6.9% of those that collaborated with partners from all other countries. The cooperation with partners outside the business sector of the enterprise was realised by 10.1% of innovative enterprises in Croatia, 1.8% of them in the remaining EU or EFTA countries and 0.6% of them in other countries.

1 ENTERPRISES, BY INNOVATION PERFORMANCE, ACTIVITY AND SIZE, 2020 – 2022¹⁾

	Total	Innovators	Non-innovators	Share of innovators, %	Share of innovators in turnover ²⁾ , %	Share of innovators in persons in employment ²⁾ , %
Total	11 465	4 172	7 293	36,4	65,9	57,1
Industrial enterprises	3 820	1 494	2 325	39,1	79,7	62,0
Service enterprises	7 645	2 677	4 968	35,0	53,8	53,3
Small enterprises	9 470	3 192	6 278	33,7	40,4	34,6
Medium-sized enterprises	1 687	769	918	45,6	62,3	48,0
Large enterprises	307	210	97	68,4	85,0	80,5

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 2022.

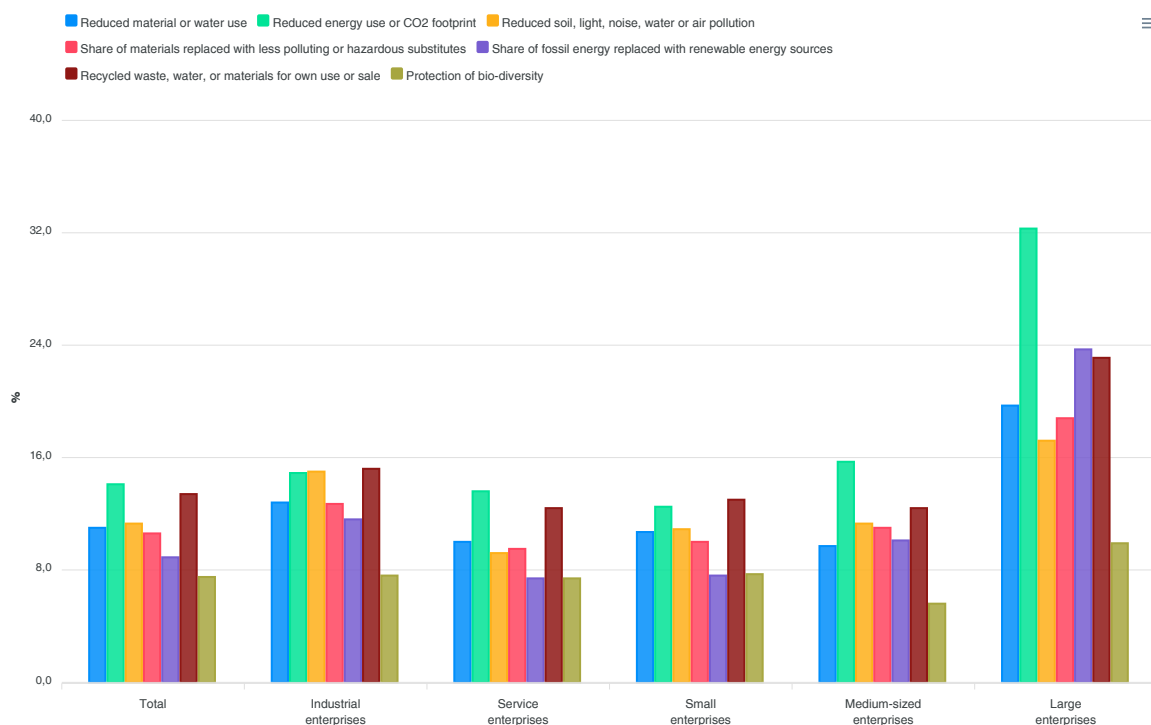
G-1 SHARE OF INNOVATIVE ENTERPRISES IN TURNOVER AND PERSONS IN EMPLOYMENT, BY ACTIVITY, 2020 – 2022

2 ENTERPRISES WITH INNOVATION EXPENDITURE, BY TYPE OF INNOVATION EXPENDITURE, ACTIVITY AND SIZE, 2022¹⁾

	Total	Enterprises with innovation expenditure ²⁾			
		Total, %	Type of innovation expenditure		
			R&D performed in-house, %	External R&D, %	Other innovation expenditure, %
Total	11 465	24,5	9,3	5,7	9,5
Industrial enterprises	3 820	28,7	11,3	6,8	10,6
Service enterprises	7 645	22,4	8,3	5,1	8,9
Small enterprises	9 470	20,2	7,5	4,6	8,1
Medium-sized enterprises	1 687	36,4	14,5	8,5	13,3
Large enterprises	307	92,2	36,3	22,8	33,2

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 2022.

G-2 INNOVATIVE ENTERPRISES BY ACTIVITY, SIZE AND INNOVATION WITH SIGNIFICANT ENVIRONMENTAL BENEFIT INTRODUCED WITHIN THE ENTERPRISE, 2020 – 2022



3 INNOVATIVE ENTERPRISES THAT DEVELOPED PRODUCT OR PROCESS INNOVATION BY THEMSELVES OR TOGETHER WITH OTHER ENTERPRISES OR INSTITUTIONS, BY ACTIVITY AND SIZE, 2020 – 2022¹⁾

	Total	Product innovation		Process innovation		By itself or together with others, %
		By itself, %	Together with others, %	By itself, %	Together with others, %	
Total	11 465	9,7	6,5	25,6	10,3	31,9
Industrial enterprises	3 820	11,8	7,0	27,6	11,4	35,5
Service enterprises	7 645	8,7	6,2	24,6	9,7	30,1
Small enterprises	9 470	8,3	5,2	24,5	8,3	29,4
Medium-sized enterprises	1 687	13,5	9,9	28,2	15,9	40,0
Large enterprises	307	33,8	28,8	47,0	41,0	62,9

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

4 INNOVATIVE ENTERPRISES THAT RECEIVED ANY PUBLIC FINANCIAL SUPPORT AND USED IT FOR R&D OR OTHER INNOVATION ACTIVITIES, 2020 – 2022¹⁾

	Innovative enterprises	Innovative enterprises that received any public financial support, %	Received funds used partially or fully for R&D or other innovation activities, %
Total	4 172	42,5	31,0
Industrial enterprises	1 494	52,2	36,1
Service enterprises	2 677	37,2	26,9
Small enterprises	3 192	40,9	28,1
Medium-sized enterprises	769	46,4	36,7
Large enterprises	210	53,7	45,2

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

5 INNOVATIVE ENTERPRISES THAT COLLABORATED ON OTHER INNOVATION ACTIVITIES WITH OTHER ENTERPRISES OR INSTITUTIONS, BY KIND AND LOCATION OF COOPERATION PARTNER, 2020 – 2022¹⁾

	Innovative enterprises	Cooperation partners from the business sector of the enterprise			Cooperation partners outside the business sector of the enterprise		
		Croatia, %	Remaining EU or EFTA countries, %	Outside EU or EFTA countries, %	Croatia, %	Remaining EU or EFTA countries, %	Outside EU or EFTA countries, %
Total	4 172	19,7	14,3	6,9	10,1	1,8	0,6
Industrial enterprises	1 494	20,1	14,3	7,3	11,8	2,3	0,8
Service enterprises	2 677	19,5	14,4	6,7	9,2	1,5	0,6
Small enterprises	3 192	16,7	12,1	5,7	7,5	1,2	0,4
Medium-sized enterprises	769	24,7	17,8	7,2	14,6	2,3	0,8
Large enterprises	210	47,8	36,2	24,1	32,6	9,4	3,8

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

NOTES ON METHODOLOGY

Data sources

Data are the outcome of the survey on innovation activities of enterprises in the period from 2020 to 2022 carried out on the sample of 4 198 enterprises (5 115 legal units). 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.

Units of observation

Starting with this survey wave (Survey on the Innovation Activities of Enterprises in the Period from 2020 to 2022), the main observation/statistical unit is the enterprise in accordance with Council Regulation 696/1993 on statistical units for the observation and analysis of the production system within the Community and according to Annex II of the Regulation EU 2019/2152 of the European Parliament and the Council of 27 November 2019 on European business statistics and repealing 10 legal acts in the field of business statistics. This wave of the survey is regulated by Commission Implementing Regulation (EU) 2022/1092 of 30 June 2022 laying down technical specifications of data requirements for the topic 'Innovation'.

Coverage and comparability

The basic group for the statistical survey on innovation activities of enterprises in the period from 2020 to 2022 was extracted from the Statistical Business Register of the Croatian Bureau of Statistics (situation as at the end of 2022). Two requests were sent to the Statistical Business Register – one for the extraction of legal units and the other for the extraction of enterprises. One company may consist of one or more legal units. The basic group contains 11 674 enterprises (10 376 enterprises and 1 298 crafts) employing 10 or more persons and with a main 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 stratification of the frame for the selection of the sample was made with regard to the activity of the enterprise and the size of the enterprise (number of persons in employment). With regard to the activity, the enterprises are grouped at the level of the NKD 2007 divisions, while, with regard to the class size, they are divided in the following way:

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

The total sample size for the survey on innovation activities of enterprise in the period from 2020 to 2022 is 4 198 enterprises (5 115 legal entities). The sample includes all medium-sized and large enterprises and a stratified random sample of small ones. The minimum sample size in the strata of small enterprises is 10. If there are less than 10 units in the stratum in the population, all are included in the sample. Allocation of the sample by strata is optimal with regard to the variable Promet2022 (enterprise turnover in 2022). In the strata in which optimal allocation would give more units in the sample than in other strata, providing that their significance for the survey on innovation activities of enterprises in the period from 2020 to 2022 is lower and/or they belong to an additional target population, the optimal allocation would also be disrupted. Therefore, these strata are further optimised by reducing the number of units in the sample.

The response rate of enterprises that filled in the questionnaire was 76.1%.

The data are not comparable with the data from the previous wave, since the survey for the period from 2018 to 2020 was conducted on legal units. Nor are they comparable with the data from previous periods due to changes in methodology (in the definition of innovation), which took place in the wave relating to the period from 2016 to 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	36.4%	1.3%	33.9% : 38.9%	3.5%
By size				
Small	33.7%	1.5%	30.7% : 36.7%	4.5%
Medium-sized	45.6%	0.7%	44.3% : 46.9%	1.4%
Large	68.3%	1.3%	65.7% : 70.9%	1.9%
By activity				
Industrial	39.1%	1.3%	36.5% : 41.7%	3.4%
Service	35.0%	1.8%	31.5% : 38.5%	5.1%

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 2020 to 2022, 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 2020 to 2022.

Process innovators are business entities that introduced a business process innovation in the period from 2020 to 2022.

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 economy of the Republic of Croatia.

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 intended 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

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