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Innovation statistics

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Innovation activities in enterprises, 2006 – 2008

The tables show the main innovation activities in enterprises, by types of innovations, enterprise size classes (small, medium and large enterprises) and classes of activities.

The most intensive innovations were organizational innovations, 28.77%, and the least intensive were product/service innovations, 18.84%. Process and marketing innovations were almost the same, 26.21% and 26.17% respectively.

The largest number of enterprises that had innovations was recorded in Manufacturing (24.58%).

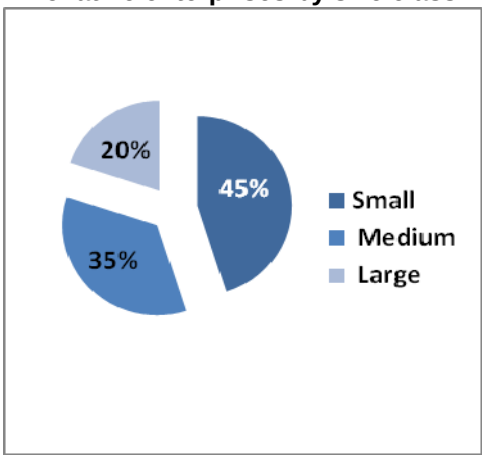
The percentage of a certain type of innovations depends on the territory where it has been introduced. In Central Serbia (without Belgrade), the largest share was observed with innovations introduced in the process of production or in the delivery method of the products/services in the enterprise (41.05%), while the largest percentage of innovations in the organization of enterprises was recorded in enterprises on the territory of Vojvodina (24.93%) and territory of Belgrade (41.92%).

In 2008, 23.83% of enterprises were the group of connected enterprises, and 92.14% of innovating enterprises said that their enterprise was the parent enterprise.

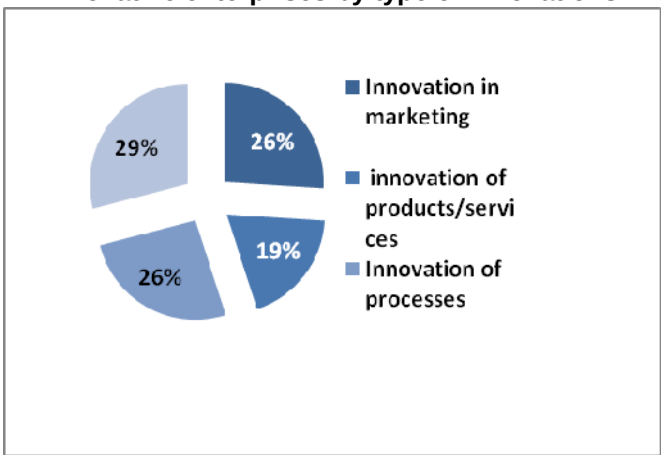
When observing the markets where innovative enterprises sold their products/services, 97.77% of enterprises said having sold goods on local markets in Serbia. The local/regional market was reported to have the largest share in markets of sale (83.22% of enterprises).

New product was introduced by 26.06% of innovating enterprises, and new service by 30.05% of enterprises.

Innovative enterprises by size class



Innovative enterprises by type of innovations



53.35% of innovative enterprises developed new products/services independently or in the group they belong to. 52.51% of innovative enterprises introduced products/services being new to the market, and 75.94% of products/services being new only to the enterprise.

Innovative enterprises that introduced a new product/service evaluated that the share of income from the innovation of product/service being new to the market was 3.02%, and of those being new to the enterprise was 6.99% in relation to the total income of the innovating enterprise.

Enterprises that introduced innovations in the process of production or delivery of products/services said that the largest share was observed in support activities to business process (28.89%).

37.44% of process innovative enterprises said that they developed the new process in co-operation with other enterprises or institutions, and 29.32% said that the introduced process is new on the market.

As to innovation activities in 2008 that did not result in product or process innovation, 7.51% of innovative enterprises said that the innovations were abandoned and 24.88% said that innovations at the end of 2008 were still on-going.

The most frequent answer as to sources of information used by enterprises to create new innovative projects or to implement the existing projects was that information came from within the enterprise or group of enterprises (25.93%).

Innovative enterprises co-operates the most with suppliers from Serbia, 69.59%, and with clients and customers from other countries – 10.81%.

The greatest effect from the implementation of product innovation was seen in improved product quality, 41.88%, the effect from introduced production process innovation was a better production flexibility, 31.73%, and the other effects from innovations were observed in complete adaptation to regulations and standards, 50.80%.

The largest share of the introduction or improvement of knowledge management techniques within enterprises was found in enterprise organizational innovation, amounting to 38.90%.

Innovative enterprises that introduced innovations to the organization said that the improvement of product quality was the most significant effect (47.74%).

The most frequent marketing innovations were new methods of product pricing (26.06%). The most significant goal of introduced innovations was the increase or maintenance of the share on the market (42.42%).

9.7% of innovative enterprises protected the hallmark, and 18.43% of enterprises mentioned the time advantage in relation to the competition as the most important method of innovation protection.

Innovative enterprises reported that the significant benefits to the environment were: lower soil, water, air pollution and lower noise levels during the manufacture of products within the enterprise by 25.47% and during the use of products by 23.71%.

The most numerous are innovations relative to the existing provisions or taxes on environmental pollution, 15.96%. The procedures for lowering the impact to the environment are implemented in a few enterprises, i.e. most of enterprises have not yet started their implementation (62.09%).

The share of equipment in enterprises older than 10 years was the highest and amounted to 27.96%.

1. Structure of the realized sample, by activities and enterprise size classes (in %)

Activity	Total	Small	Medium	Large
Mining and quarrying 10-14	1,37	1,32	1,22	1,96
Manufacturing 15-37	24,58	20,70	26,76	34,07
Electricity, gas and water supply 40-41	2,84	0,94	4,41	6,13
Construction 45	9,91	7,97	12,02	12,01
Trade of motor vehicles 50	6,72	8,97	4,79	2,94
Wholesale trade 51	15,88	17,25	16,06	10,05
Retail trade 52	6,85	5,65	8,54	7,11
Transportation and communications 60-64	3,03	3,14	3,00	2,70
Financial activities 65-67	1,70	0,69	1,03	7,35
Computer and related activities 72	3,26	4,02	1,03	6,13
Scientific research and development 73	2,18	1,94	3,10	0,74
Real estate activities, rental 74	12,85	17,19	9,30	5,15
Other	8,84	10,23	8,73	3,68
Total	100	100	100	100

2. Share of the type of innovations in enterprises, by territory (in %)

Territory, enterprise size	Product/service innovations	Process innovations	Organizational innovations of enterprise	Marketing innovations
Republic of Serbia	**100**	**100**	**100**	**100**
Central Serbia (without Belgrade)	36,82	41,05	33,15	36,14
Vojvodina	23,01	22,56	24,93	22,74
Belgrade	40,17	36,39	41,92	41,11

3. Structure of the type of innovations in total innovation activities (in %)

Republic of Serbia	Product/service innovations	Process innovations	Organizational innovations of enterprise	Marketing innovations	Product/service innovations
Total	**100**	**18,84**	**26,21**	**28,77**	**26,17**
Small	100	20,30	26,38	28,01	25,30
Medium	100	17,65	26,08	28,97	27,30
Large	100	18,46	26,15	29,51	25,87

4. Types and characteristics of innovations (in %)

	Total	Small	Medium	Large
Product/service innovations				
Enterprises that introduced new or significantly improved products	26,06	21,58	25,17	37,65
Enterprises that introduced new or significantly improved services	30,05	27,63	27,48	40,00
Products/services new to the market	52,51	54,55	55,35	46,21
Products/services new only to enterprises	75,94	81,28	81,76	61,36
Share of income from product/service innovations in the total income of innovative enterprises				
From product/service innovations new to the market	3,02	0,89	0,90	3,89
From product/service innovations new to enterprises	6,99	1,57	2,23	9,03
From unchanged products/services	89,99	97,54	96,87	87,08
Process innovations				
Enterprises that introduced new or improved methods of product/service production	34,44	33,74	35,32	34,22
Enterprises that introduced new or improved purchase and delivery method of products/services	24,36	25,51	22,98	24,59
Enterprises that introduced new or improved support activities to business practice	41,20	40,74	41,70	41,18
Innovation activities of introducing products and processes performed by enterprises				
Intramural research and development activities	31,76	34,42	31,22	28,84
Extramural research and development services	16,01	14,65	14,47	19,75
Purchase of equipment and software	45,84	51,86	46,70	36,68
Purchase of other forms of knowledge	18,37	18,84	17,01	19,44
Education and training	38,50	43,49	36,55	34,17
Introduction of innovations to the market	30,53	36,51	28,43	25,08
All forms of design	18,99	21,16	18,53	16,61
Expenditure for innovation activities of introducing new products and processes of innovative enterprises				
Intramural research and development activities	6,31	4,94	19,72	4,29
Extramural research and development	2,58	1,31	1,49	3,77
Purchase of equipment and software	44,44	49,02	57,98	3,.96
Acquiring new knowledge	0,90	0,48	1,28	1,13
Education and training	31,49	41,82	2,49	30,39
All forms of design	0,67	0,30	1,56	0,74
Marketing costs	13,62	2,13	15,48	21,73
Total costs of innovation activities	100	100	100	100

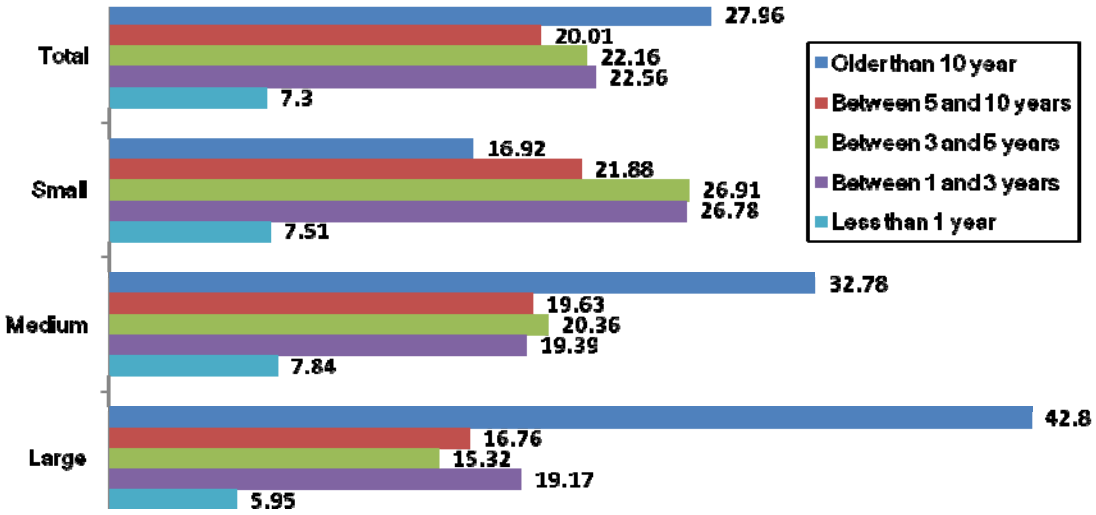
4. Types and characteristics of innovations (in %) (continued)

	Total	Small	Medium	Large
Effects of product/service innovations				
Product-related effects:				
Greater assortment	33,33	34,30	34,52	29,85
Breakthrough to new markets and increase of the share on the market	24,78	25,21	23,35	26,12
Quality improvement	41,88	40,50	42,13	44,03
Process-related effects:				
Greater flexibility	31,73	33,50	28,86	32,41
Growth of production capacities	26,91	26,50	25,50	29,63
Decrease of labour costs per product unit	21,88	22,50	21,48	21,30
Decrease of material and energy costs per product unit	19,47	17,50	24,16	16,67
Other effects:				
Diminishing harmful environmental impact	25,52	25,88	27,12	21,59
Satisfaction of regulations' and standards' requirements	50,80	47,65	50,85	56,82
Increased valued added	23,68	26,47	22,03	21,59
Organizational innovations				
New and improved techniques of knowledge management within enterprises	38,90	43,41	37,16	35,55
Organizational changes in enterprises	36,71	34,11	39,08	36,97
Changes to the relations with other enterprises or institutions	24,38	22,48	23,75	27,49
Effects of innovations in enterprises				
Shorter response time to customers' needs	43,02	44,72	5,85	6,42
Greater capacities to develop new products	33,77	43,40	12,64	10,19
Improvement product quality	47,74	38,68	7,74	5,85
Decrease of costs per product unit	19,09	45,75	24,01	11,15
Improvement of communications with enterprises and with other enterprises	42,75	43,69	9,60	3,95
Marketing innovations				
Changes to aesthetic designs or packaging	17,84	14,74	17,22	25,88
New media for product promotion	21,83	16,84	22,85	31,18
New distribution methods	12,21	8,68	14,24	16,47
New pricing methods	26,06	21,05	27,15	35,29
Protection of intellectual property rights and methods of innovation protection				
Protection of rights :				
Patent application	2,11	1,32	2,98	2,35
Small patent application	1,29	0,53	1,99	1,76
Protection of industrial design	3,17	1,32	2,98	7,65
Protection of hallmark	9,27	4,74	9,27	19,41
Protection of copyrights	3,64	1,32	3,97	8,24
Methods of innovation protection:				
Registration of design	5,99	3,16	6,95	10,59
Trade marks	10,33	6,05	10,60	19,41
Contracts/agreements on confidentiality	15,61	12,89	13,91	24,71
Secrecy	13,62	10,79	11,92	22,94
Complexity of design	6,69	5,26	6,29	10,59
Time advantage in relation to the competition	18,43	14,74	18,21	27,06
Benefits from innovations relative to the environment				
Benefits from manufacture of products within enterprises:				
Decreased use of materials per product unit	20,54	13,42	22,85	32,35
Decreased use of energy per product unit	23,94	15,79	26,82	37,06
Decreased CO2 emission by enterprises	18,08	12,11	18,54	30,59
Products replaced by substitutes that pollute less the environment	16,90	11,58	17,22	28,24
Decreased soil, water, air pollution, lower noise level	25,47	17,37	26,82	41,18
Recycling of waste, water or materials	16,90	8,68	16,89	35,29

4. Types and characteristics of innovations (in %) (continued)

	Total	Small	Medium	Large
Benefits during the use of products after the sale:				
Decreased energy use	21,24	15,53	24,17	28,82
Decreased soil, water, air pollution, lower noise level	23,71	17,89	25,17	34,12
Improved recycling of products after use	16,31	11,58	15,56	28,24
Innovating potential – age of equipment in enterprises				
Older than 10 year	27,96	16,92	32,78	42,80
Between 5 and 10 years	20,01	21,88	19,63	16,76
Between 3 and 5 years	22,16	26,91	20,36	15,32
Between 1 and 3 years	22,56	26,78	19,39	19,17
Less than 1 year	7,30	7,51	7,84	5,95
Total	100	100	100	100

Age of equipment in enterprises in %



5. Enterprises that performed a type of innovation activity in relation to all enterprises in the realized sample (in %)

	Total	Small	Medium	Large
Technological innovators – enterprises that introduced product/process innovation	21,94	16,00	21,78	45,59
Other innovators – enterprises that introduced organizational or marketing innovations	21,32	15,12	22,44	42,65
Enterprises that did not realize innovations or did not complete them before the end of 2008	7,76	4,14	9,48	17,40

Remark

The survey on innovation activities was carried out for the first time aiming at identifying the real relationships of business policy of enterprises to innovation activities in terms of enterprises being acquainted with innovation effects, existing capacities in enterprises, as well as of factors that hampered or slowed down this kind of activity. The obtained data show the type, volume and quality of innovation activities in enterprises.

The data are presented in percentages and refer to the share of enterprises in certain types of innovation activities. More indicators on innovation activities are available in the working paper on innovation activities of enterprises 2006-2008.

Methodological explanations

The Survey on Innovations in Enterprises was carried out on a representative, two-stage sample. The sample was allocated to the territory of Central Serbia (without Belgrade), AP Vojvodina and Belgrade, proportionally to the number of enterprises. The sample size was 3500 small, medium and large enterprises. The realized sample was 87.63%.

The survey for small, medium and large enterprises was carried out on a sample stratified by enterprise size classes, the number of employees determining the size:

-Small enterprises: from 10 to 49 employees,
-Medium enterprises: from 50 to 249 employees, and
-Large enterprises: 250 and more employees;
-And by activities (classes of activities according to Eurostat recommendations):
-The survey was conducted in two phases:
-The first phase was a telephone interview allowing obtaining the main data on enterprises, as well as information on whether enterprises carried out innovation activities in the reference period. This made possible to identify enterprises that carried out innovation activities, and the reasons for lack of innovations in enterprises (3067 enterprises – realized sample).
-The second phase presented an all-inclusive survey of innovative enterprises, i.e. data were obtained on the types of innovations, needs and effects of innovations, existing capacities in enterprises, as well as on factors that hampered or slowed down this kind of activities (852 innovative enterprises, which was 27.78% of the realized sample).

The instruments used in the survey were as follows:

-traditional questionnaire (paper, postal sending and receiving) – 50.93%;
-web questionnaire (downloaded and uploaded via web application) – 35.92%;
-on-line questionnaire (downloaded and returned by e-mail) – 13.15%.

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