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| Description: ZnakRZS | Republic of Serbia  Statistical Office of the Republic of Serbia | ISSN 0353-9555 |
| **STATISTICAL RELEASE** | | **IА01** |
| number 197 - year LXVII, 20/07/2017 | |  |
| **Science, Technology and Innovation Statistics** | | SRB197 IА01 200717 |

Indicators of innovation activities, 2014−2016

The data presented in this statistical release are the result of the survey on innovation activities in enterprises, over 2014-2016. The survey was carried out on a sample of 3587 enterprises. Innovative enterprises are defined as enterprises that introduced, in the reference period, a product/process innovation, organizational innovation or marketing innovation. The survey showed that the share of enterprises with at least one of the mentioned types of innovations amounted to 41.2%. The size of enterprises was key factor for their innovation activity. Among innovative enterprises there were two out of three large innovative enterprises, somewhat more than a half of medium ones and slightly more than 38% of small enterprises. Innovation activities were more present in manufacturing enterprises, in which almost a half introduced innovations, while regarding service enterprises, less than 40% introduced innovations.

**1. Enterprises by innovations, activities and size classes**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Total | Innovators | Non-innovative enterprises | Share of innovators (%) |
|  |  |  |  |  |
| **Total** | **16957** | **6994** | **9963** | **41.2** |
| Small enterprises | 14174 | 5417 | 8757 | 38.2 |
| Medium enterprises | 2257 | 1228 | 1030 | 54.4 |
| Large enterprises | 526 | 349 | 177 | 66.3 |
| Manufacturing enterprises | 4723 | 2232 | 2492 | 47.3 |
| Service enterprises | 12233 | 4762 | 7472 | 38.9 |

Referring to regional distribution, the greatest was the share of enterprises with product/ service innovations and was equally distributed by regions, meaning that more than a fourth of enterprises introduced a new product or service. Regional distribution of organizational and marketing innovations was from 20.9% to 25%, while the share of process innovations was from 17.4% to 25%.

**2. Share of types of innovations by territory and size classes of enterprises**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Territory | Size class | Innovative enterprises | | | | | Non-innovative enterprises |
| Product/service innovations | Process innovations | Abandoned innovations or on-going innovations | Organizational innovations | Marketing innovations |
|  |  |  |  |  |  |  |  |
| **REPUBLIC OF SERBIA** | **Total** | **26.9** | **21.0** | **14.3** | **24.2** | **22.3** | **58.8** |
|  | **Small** | **25.3** | **19.0** | **13.3** | **22.1** | **20.3** | **61.8** |
|  | **Medium** | **33.0** | **28.9** | **17.7** | **31.8** | **30.3** | **45.6** |
|  | **Large** | **45.4** | **41.7** | **27.7** | **47.3** | **40.9** | **33.6** |
|  |  |  |  |  |  |  |  |
| SRBIJA − SEVER | Total | 26.4 | 19.7 | 14.9 | 24.9 | 21.7 | 58.7 |
|  | Small | 24.6 | 17.5 | 14.0 | 23.0 | 19.7 | 61.8 |
|  | Medium | 34.5 | 28.6 | 17.7 | 33.2 | 30.5 | 43.6 |
|  | Large | 46.9 | 44.4 | 29.2 | 48.2 | 43.4 | 30.7 |
|  |  |  |  |  |  |  |  |
| Beogradski region | Total | 27.2 | 21.0 | 16.1 | 25.0 | 22.0 | 58.7 |
|  | Small | 25.1 | 18.7 | 15.4 | 23.3 | 20.1 | 61.9 |
|  | Medium | 38.3 | 32.1 | 17.2 | 31.8 | 30.6 | 41.3 |
|  | Large | 47.9 | 47.2 | 31.7 | 49.9 | 46.6 | 25.8 |
|  |  |  |  |  |  |  |  |
| Region Vojvodine | Total | 25.1 | 17.4 | 12.8 | 24.9 | 21.3 | 58.8 |
|  | Small | 23.6 | 15.3 | 11.4 | 22.4 | 19.1 | 61.6 |
|  | Medium | 29.6 | 24.1 | 18.4 | 35.0 | 30.5 | 46.6 |
|  | Large | 45.3 | 40.0 | 25.4 | 45.5 | 38.4 | 38.3 |

**2. Share of types of innovations by territory and size classes of enterprises (%)** (continued)

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Territory | Size class | Innovative enterprises | | | | | Non-innovative enterprises |
| Product/service innovations | Process innovations | Abandoned innovations or on-going innovations | Organizational innovations | Marketing innovations |
|  |  |  |  |  |  |  |  |
| SRBIJА − JUG | Total | 28.0 | 24.2 | 13.1 | 22.6 | 23.4 | 58.9 |
|  | Small | 26.9 | 22.7 | 11.7 | 20.1 | 21.6 | 61.8 |
|  | Medium | 30.8 | 29.3 | 17.6 | 29.7 | 30.0 | 48.6 |
|  | Large | 41.6 | 35.1 | 24.2 | 45.4 | 34.8 | 40.7 |
|  |  |  |  |  |  |  |  |
| Region Sumadije i Zapadane Srbije | Total | 28.4 | 25.0 | 13.6 | 22.7 | 25.0 | 57.6 |
|  | Small | 27.6 | 24.2 | 12.6 | 20.7 | 22.9 | 59.6 |
|  | Medium | 29.9 | 27.3 | 16.2 | 28.5 | 32.6 | 50.0 |
|  | Large | 42.9 | 34.2 | 24.6 | 43.2 | 35.8 | 45.4 |
|  |  |  |  |  |  |  |  |
| Region Juzne i Istocne Srbije | Total | 27.4 | 22.8 | 12.3 | 22.3 | 20.9 | 61.1 |
|  | Small | 25.8 | 20.2 | 10.2 | 19.2 | 19.4 | 65.4 |
|  | Medium | 32.2 | 32.6 | 19.9 | 31.7 | 25.7 | 46.3 |
|  | Large | 39.8 | 36.6 | 23.5 | 48.6 | 33.4 | 33.8 |

Share of enterprises with organizational and marketing innovations was 30.2% and was less than enterprises with product and process innovations, where a third part of enterprises were innovative. The mentioned two groups of innovations mostly appeared simultaneously in enterprises. Share of enterprises that simultaneously introduced product and process innovations and organizational and marketing innovations amounted to 22.4%. The greatest presence of innovative enterprises was in manufacturing and professional, scientific and technical activities.

3. Enterprises by types of innovations and sections of activities

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | | Innovators | | | | | | | | Non-innovators  % |
| Total | | Product/service innovators | | Organizational/ marketing innovators | | Product/process innovators and organizational/ marketing innovators | |
| Number | % | Number | % | Number | % | Number | % |  |
|  |  |  |  |  |  |  |  |  |  |  |
| **Total** | | **6994** | **41.2** | **5665** | **33.4** | **5129** | **30.2** | **3800** | **22.4** | **58.8** |
| A: | Agriculture. forestry and fishing | 177 | 41.9 | 136 | 32.2 | 138 | 32.7 | 97 | 23.0 | 58.1 |
| B: | Mining | 16 | 27.1 | 11 | 18.6 | 12 | 20.3 | 7 | 11.9 | 72.9 |
| C: | Manufacturing | 2002 | 47.9 | 1700 | 40.7 | 1527 | 36.6 | 1225 | 29.3 | 52.1 |
| D: | Electricity. gas and steam. air conditioning supply | 36 | 53.7 | 27 | 40.3 | 23 | 34.3 | 14 | 20.9 | 46.3 |
| Е: | Water supply. sewerage and waste management and remediation activities | 94 | 31.1 | 73 | 24.2 | 86 | 28.5 | 64 | 21.2 | 68.9 |
| F: | Construction | 368 | 36.7 | 318 | 31.7 | 209 | 20.9 | 159 | 15.9 | 63.3 |
| G: | Wholesale and retail trade; repair of motor vehicles and motorcycles | 966 | 31.0 | 671 | 21.5 | 699 | 22.4 | 403 | 12.9 | 69.0 |
| H: | Transportation and storage | 289 | 37.3 | 195 | 25.2 | 177 | 22.9 | 84 | 10.9 | 62.7 |
| I: | Accommodation and food service activities | 136 | 30.8 | 119 | 26.9 | 127 | 28.7 | 109 | 24.7 | 69.2 |
| Ј: | Information and communications | 1061 | 40.2 | 847 | 32.1 | 828 | 31.4 | 614 | 23.3 | 59.8 |
| К: | Financial and insurance activities | 114 | 38.1 | 76 | 25.4 | 107 | 35.8 | 69 | 23.1 | 61.9 |
| L: | Real estate activities | 5 | 8.5 | 3 | 5.1 | 3 | 5.1 | 1 | 1.7 | 91.5 |
| М | Professional. scientific and technical activities | 1505 | 47.3 | 1304 | 41.0 | 1020 | 32.1 | 818 | 25.7 | 52.7 |
| N: | Administrative and support activities | 224 | 53.1 | 185 | 43.8 | 174 | 41.2 | 136 | 32.2 | 46.9 |
| Q: | Human health and social work activities | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| R: | Arts. entertainment and recreation | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

4. Share in the total income from product/service innovations

In the structure of innovative enterprises’ income, the share of income from sale of unchanged or slightly changed products was predominant and amounted to 32%, while that of sale of products/services new to the enterprises, and that of sale of products/services new to market totalled to approximately 15%.

**Structure of innovators’ income**



12.5% of enterprises - innovators were subsidized by state instances (financial support in the form of tax relief, grants, subsidized loans, loan guarantees).

Structure of financial assistance to technical innovators



5. Market of sale of products/services

Among enterprises that sell products/services, the most numerous were those selling on the local-regional market, followed by those selling on the national market. The share of innovators, versus that of non-innovators on the market of EU and EFTA countries was by 50% higher and on the markets of other countries was even slightly over 50%.

|  |  |  |  |
| --- | --- | --- | --- |
| Market | Innovators | | Non-innovators |
| Product/ process innovators | Organizational/ marketing innovators |
|  |  |  |  |
| Local/regional market | 55,1 | 53,6 | 63,6 |
| National market | 23,1 | 24,0 | 23,1 |
| EU and EFTA markets | 15,0 | 15,6 | 7,8 |
| Other markets | 6,8 | 6,7 | 5,5 |

**6. Expenditures for innovation activities**

Expenditures for innovation activities cover costs for the development of new products, costs for the introduction of a new product to the market, costs for significant improvement of existing products, services or processes, as well as costs for unfinished innovation projects. Expenditures for innovation activities encompass current costs (wages and salaries, equipment, materials, services, etc.), as well as investment costs. In the total expenditures for innovation activities of enterprises, the largest percentage share was recorded for the purchase of machinery, equipment and software, approximately over 71%.

**Structure of innovation activities expenditures**



**7. Significance of factors that were obstacles to innovation activities**

Majority of enterprises that were non-innovators had no motive for innovation activities (77%), while in 23% of enterprises there was a need, together with numerous obstacles. As the greatest obstacles to innovations, enterprises reported shortage of own financial resources, followed by too high expenditures for innovations.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Factors | importance | | | |
| high | medium | small | negligible |
|  |  |  |  |  |
| Shortage of own financial resources | 14,6 | 4,4 | 2,9 | 78,1 |
| Shortage of credits or private capital | 8,0 | 7,6 | 4,0 | 80,3 |
| Too high expenditures for innovations | 12,6 | 5,4 | 3,4 | 78,5 |
| Shortage of qualified staff in enterprises | 5,3 | 7,4 | 5,3 | 81,9 |
| Lack of partners for cooperation | 5,5 | 7,2 | 5,5 | 81,9 |
| Difficult obtaining of state donations an subsidies | 9,5 | 4,6 | 5,3 | 80,5 |
| Uncertain demand on the market for your innovative ides | 6,7 | 6,8 | 5,0 | 81,6 |
| Too big competition on your market | 7,0 | 6,8 | 5,0 | 81,3 |
| Legislative regulations are a burden | 7,1 | 6,7 | 5,5 | 80,8 |
| Legislative regulations provoke uncertainty | 7,6 | 6,6 | 4,7 | 81,1 |
| Legislative regulations are not consistent in the whole EU | 5,0 | 5,1 | 6,0 | 83,9 |

**8. Employees with tertiary education or education after the completed faculty (master, specialist, Mr, PHD)**

In total population of enterprises, a fourth part are those with no employees who have completed tertiary education, which mostly refers to small enterprises. The greatest number of enterprises employees from 1% to 4%% of tertiary educated persons, while almost a third part of large enterprises is with 10% to 24% of employees who have completed tertiary education.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  | Employees with tertiary education or education after the completed faculty | | | | | | |
| 0% | 1‒4% | 5‒9% | 10‒24% | 25‒49% | 50‒74% | 75‒100% |
|  |  |  |  |  |  |  |  |
| **Total** | **24,74** | **19,47** | **8,84** | **14,74** | **9,87** | **10,32** | **12,02** |
| Small | 27,96 | 18,06 | 6,77 | 12,38 | 9,81 | 11,22 | 13,79 |
| Medium | 9,74 | 28,12 | 18,33 | 25,55 | 9,39 | 5,76 | 3,10 |
| Large | 2,29 | 20,19 | 23,81 | 32,19 | 13,14 | 5,71 | 2,67 |

Methodological remarks

The survey on innovative enterprises was carried out on a representative sample. The sample was allocated to the territory of the Republic of Serbia up to the level of regions, proportionally to the number of enterprises. The sample size was **3587** small, medium and large enterprises. Large enterprises were fully covered. The sample frame covered active enterprises from the Statistical Business Register, containing 16957enterprises. The obtained results were weighted and calculated on the level of the population of enterprises.

The survey on enterprises was carried out on a stratified sample according to the size class of enterprises (small: from 10 to 49 employees, medium: from 50 to 249 employees and large: more than 250 employees) and according to activities (classes of activities according to CA 08). Sample realization was over 81%; approximately 2% of selected enterprises were not on the referent address, also 2% of enterprises did not respond to the survey due to some other reason, while 1% of selected enterprises were frozen or in bankruptcy. 14% of enterprises did not respond to the survey.

Information is collected via web questionnaire (14%), e-mail (15%) and printed questionnaire which was disseminated and collected by post (71%).

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