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JUSTIFICATION OF EXPENDITURE OF INNOVATIVE DEVELOPMENT OF ENTERPRISES

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The article examines the dynamics of innovation performance of industrial enterprises. The dynamics of volumes of financing of innovative activity of industrial enterprises of Ukraine were analyzed in this article. Also the analysis of indicators of financial maintenance of innovative activity of industrial enterprises of Ukraine and Zaporozhye area was carried out. The analysis of innovative activity of industrial enterprises by types of the carried out innovations was executed. Research has shown that despite the recognition of the role of innovation in the economic development of the state, the current state of economic incentives as a factor in the innovation of enterprises in Ukraine indicates insufficient conditions for the realization of innovation potential. It was established that the volume of costs of Ukrainian enterprises can be divided into internal and external research. It is noted that the costs of research and development have a gradually increasing trend, which means that Ukrainian companies spend more money each year on research, theoretical and experimental work to identify hidden opportunities for innovative products and technologies, as well as work that related to the development of design and technological documentation. The necessity of development of innovative activity of enterprises is substantiated and it is proved that expenses for innovative processes are a means of development of industrial enterprises. Obstacles hindering the innovative activity of industrial enterprises were also identified and measures to eliminate them were proposed.

ОБҐРУНТУВАННЯ ДОЦІЛЬНОСТІ ІННОВАЦІЙНОГО РОЗВИТКУ ПІДПРИЄМСТВ

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Ключові слова:

інновації, інноваційна активність, фактори, фінансування, державний бюджет, промисловість, тенденції, ефективність, підприємства

У статті досліджено динаміку показників інноваційної активності промислових підприємств. Проаналізовано динаміку обсягів фінансування інноваційної діяльності промислових підприємств в Україні, а також проведено аналіз показників фінансового забезпечення інноваційної діяльності промислових підприємств України та Запорізької області. Виконано аналіз інноваційної діяльності промислових підприємств за видами проведених інновацій. Дослідження показали, що незважаючи на визнання ролі інновацій для економічного розвитку держави, сучасний стан економічного стимулювання як чинника інноваційної діяльності підприємств в Україні свідчить про недостатні умови для реалізації інноваційного потенціалу. Встановлено, що обсяг витрат підприємств України можна поділити на внутрішні та зовнішні НДР. Зазначено, що витрати на дослідження та розробки мають поступово зростаючу тенденцію, що означає, що підприємства України з кожним роком витрачають більшу суму грошей на виконання пошукових, теоретичних та експериментальних робіт для виявлення прихованих можливостей створення інноваційних продуктів та технологій, а також на роботи, які пов'язані з розробкою конструкторської та технологічної документації. Обґрунтовано необхідність розвитку інноваційної активності підприємств та доведено, що витрати на інноваційні процеси є засобом розвитку промислових підприємств. Також виявлено перешкоди, що стримують інноваційну активність промислових підприємств і запропоновані заходи щодо їх усунення.

Analysis of recent research and publications

A significant contribution to the study of innovation of enterprises was made by domestic scientists: Baranovska S.P. [1], Boychuk N.Ya. [2], Buzhimska K.O. [3], Varnaliy S.S. [4], Haman M.V. [6], Geets V.I. [5], Datsy O.I. [6], Datsy N.V. [6], Kuzmin O.E. [7], Silantiev S.O. [8], Fedulova L.I. [9] and others. However, given the further integration of Ukraine into the European space and the new challenges posed by modern globalization processes, many aspects of this issue remain obscure and need to be addressed.

Formulation of the goals of the article

The aim of the article is to study the dynamics of innovation activity of industrial enterprises of Ukraine in modern economic conditions in the context of determining proposals for improving their innovative development.

Presentation of the main material of the study

An important factor in creating conditions for the rapid growth of the national economy, overcoming the socio – economic crisis and increasing competitiveness on the world stage is the active innovation of enterprises. The experience of developed countries shows that industrial enterprises that effectively use new knowledge and achievements are able to increase production and sales, reduce costs, to increase labor productivity, achieve technological independence and increase the efficiency of their activities. According to experts, scientific and technological progress as a source of economic growth in the near future will provide up to 90% of the real increase in production (today it is 65–70%) [10, p. 89].

The main indicators of innovation activity are the share of enterprises that have implemented innovations and the share of sold innovative products in the volume of industrial.

From fig. 1 shows that the minimum share of enterprises that implemented innovations took place in 2012 and amounted to 12.1%, and the maximum – in 2016 and

amounted to 16.6%. The share of sold innovative products in the volume of industrial products is characterized by the lowest rate in 2017 (0.7%) and the highest – in 2014 (2.5%). Thus, there is a high discrepancy between the implemented innovations and sold products in the industry. This suggests that the lack of financial resources forces companies to reorient from the production of innovative products to the introduction of technological, resource-saving processes that can optimize their costs.

Despite the recognition of the role of innovation for the economic development of the state, the current state of economic incentives as a factor in the innovative activity of enterprises in Ukraine indicates insufficient conditions for the realization of innovation potential. Let us analyze the dynamics of funding for innovation activities of industrial enterprises (Table 1).

Analysis of sources of financing of innovative activity of enterprises of Ukraine for 2005–2020 indicates that the costs of innovation are covered by the own funds of enterprises. The share of which in 2020 is up to 85.4% of total spending on innovation. A negative trend is the decrease in funding for innovation by foreign investors.

Their share in total expenditures on innovation in Ukraine decreased from 2.7% to 0.9% in 2020.

Funding for innovation from the state budget for the presented period was carried out only at the level of up to 5%, and in some years were much lower than this level, which indicates limited opportunities for state support for innovation. It is unfortunate that with the start of the war in eastern Ukraine, foreign investors have virtually stopped investing in the innovative activities of domestic enterprises. During 2014–2018, the share of foreign investment in Ukrainian innovation did not exceed 2%.

According to the State Statistics Service of Ukraine presented in table 2 we see that in 2018 the largest number of industrial enterprises introduced new machines, equipment and software, and the least common type of innovation is conducting external research and acquisition of other external knowledge. Expenditures in 2018

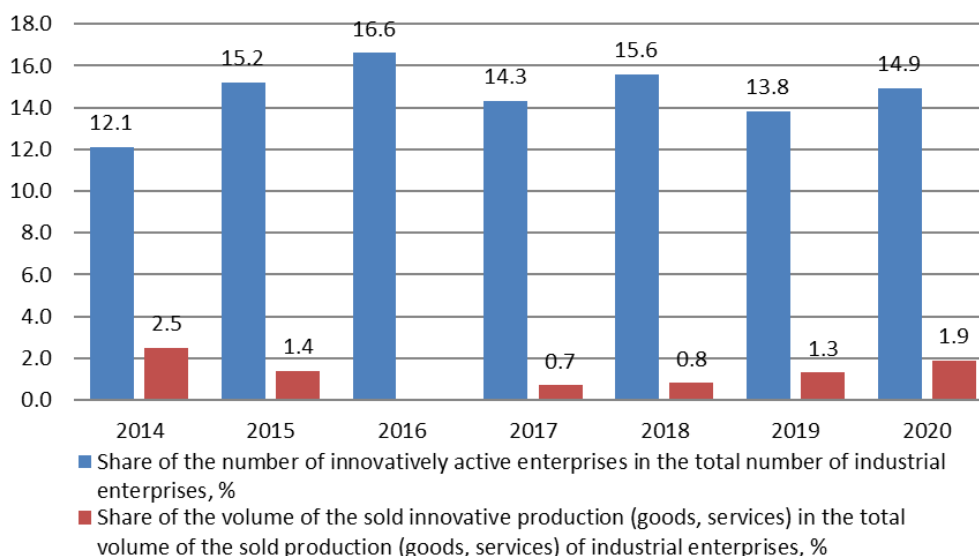


Fig. 1 – Innovative activity of industrial enterprises during 2014–2020

Table 1 – Dynamics of volumes of financing of innovative activity in Ukraine in 2005–2020

Years	Total amount of financing (UAH million)	Including by sources							
		Own funds		National budget		Foreign investors		Other sources	
		UAH million	%	UAH million	%	UAH million	%	UAH million	%
2005	5751,6	5045,4	7,7	28,1	0,5	157,9	2,7	520,2	9,0
2006	6160,0	5211,4	4,6	114,4	1,9	176,2	2,9	658,0	0,7
2007	10821,0	7969,7	3,7	144,8	1,3	321,8	3,0	2384,7	2,0
2008	11994,2	7264,0	0,6	336,9	2,8	115,4	1,0	4277,9	5,7
2009	7949,9	5169,4	5,0	127,0	1,6	1512,9	9,0	1140,6	4,3
2010	8045,5	4775,2	9,4	87,0	1,1	2411,4	0,0	771,9	9,6
2011	14333,9	7585,6	2,9	149,2	0,0	56,9	0,4	6542,2	5,6
2012	11480,6	7335,9	3,9	224,3	2,0	994,8	8,7	2925,6	5,5
2013	9562,6	6973,4	2,9	24,7	0,3	1253,2	3,1	1311,3	3,7
2014	7695,9	6540,3	5,0	344,1	4,5	138,7	1,8	672,8	8,7
2015	13813,7	13427,0	7,2	55,1	0,4	58,6	0,4	273,0	2,0
2016	23229,5	22036,0	4,9	179,0	0,8	23,4	0,1	991,1	4,3
2017	9117,5	7704,1	4,5	227,3	2,5	107,8	1,2	1078,3	1,8
2018	12180,1	10742,0	8,2	639,1	5,2	107,0	0,9	692,0	5,7
2019	14220,9	12474,9	7,7	556,5	3,9	42,5	0,3	1147,0	8,1
2020	14406,7	12297,7	5,4	279,5	1,9	125,3	0,9	1704,2	1,8

Source: calculated according to the Main Department of Statistics in Ukraine [11]

Table 2 – Innovative activity of industrial enterprises by types of innovations for 2012–2018

Indexes	2012	2013	2014	2015	2016	2017	2018
Share of the number of innovatively active enterprises in the total number of industrial enterprises, %	17,4	16,8	16,1	17,3	18,9	16,2	16,4
Innovation expenditure, million UAH	11480,6	9562,6	7695,9	13813,7	23229,5	9117,5	12180,1
Research and development (R&D) million UAH	1196,3	1638,5	1754,6	2039,5	2457,8	2169,8	3208,8
Internal (R&D), million UAH	965,2	1312,1	1221,5	1834,1	2063,8	1941,3	2706,2
External (R&D), million UAH	231,1	326,4	533,1	205,4	394	228,5	502,6
Acquisition of other external funds, million UAH	47	87	47	84	64	21	46
Purchase of machinery, equipment and software, million UAH	8051,8	5546,3	5115,3	11141,3	19829	5898,8	8291,3
Other expenses, million UAH	2185,5	2290,9	778,8	548	878,4	1027,1	633,9

Source: calculated according to the Main Department of Statistics in Ukraine [11]

for the acquisition of external knowledge amounted to UAH 502.6 million, and expenditures for the purchase of machinery, equipment and software amounted to UAH 8,291.3 million.

It should also be noted that research and development costs are gradually increasing. This means that Ukrainian companies spend more money every year on research, theoretical and experimental work to identify hidden opportunities for innovative products and technologies, as well as work related to the development of design and technological documentation. The corresponding cost item is divided into internal and external R&D.

Figure 2 shows that Ukrainian enterprises prefer innovative activities in domestic production, rather than the purchase of ready-made equipment, technologies and ideas in foreign markets.

The main problems that determine the current state of innovation in industrial enterprises of Ukraine are [12]:

1) inconsistency of legislation in the field of innovation, inconsistency of the norms of bylaws with the progressive norms of current laws, which does not ensure the practical implementation of the latter;

2) inconsistency of state actions to support the subjects of innovation;

3) a significant reduction in innovation activity of enterprises and the general deterioration of the innovation culture of society;

4) inefficiency of mechanisms of legal protection of intellectual property;

5) lack of a proper system for forecasting scientific, technological and innovative development;

6) dissemination of the practice of ignoring current norms during the adoption of laws on the state budget for the current or next years.

While investigating the innovative activity of industrial enterprises of Zaporozhye region, it is advisable to analyze their activity in the field of implementation of various innovations (Table 3).

Thus, the majority of the total expenditure on technological innovations falls on the purchase of machinery, equipment and software in 2019, the figure was – 514444.8 thousand UAH. Instead, the acquisition of other external knowledge will cost at least in 2019 only 99 thousand UAH (Table 3).

Conclusions

The results of the study show that the main source of funding for innovation of domestic enterprises are their

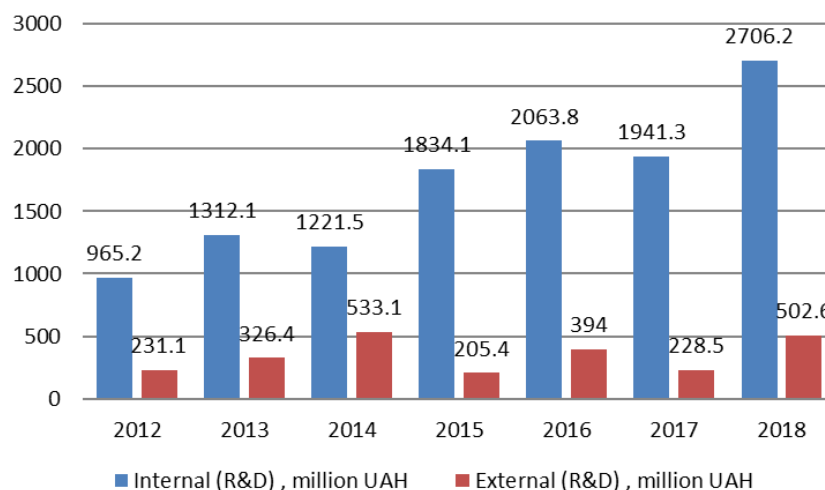


Fig. 2 – The amount of costs of Ukrainian enterprises for internal and external research

Table 3 – Innovative activity of industrial enterprises of Zaporozhye region

Indexes	2011	2012	2013	2014	2015	2017	2019
Share of the number of innovatively active enterprises in the total number of industrial enterprises, %	27,6	29,8	28,8	22,9	20,9	19,1	19,3
Innovation expenditure, thousand UAH	800427,2	242990,6	298671,5	339943,9	321051,3	1393360,2	681707,2
Research and development (R&D), thousand UAH	77024,6	66016,7	140190,1	111248,8	123797,2	252003,3	136254,5
Internal (R&D), thousand UAH	55376	49274,3	21158,4	33771,3	61744,9	138579,4	92861,2
External (R&D), thousand UAH	21648,6	16742,4	119031,7	77477,5	62052,3	113423,9	43393,3
Acquisition of other external funds, thousand UAH	252330	283,9	393,1	515,2	359,2	531,4	99
Purchase of machinery, equipment and software, thousand UAH	4179874	107914,5	129235,9	197073,7	94659	915464,4	514444,8
Other expenses, thousand UAH	53085,2	68775,5	28852,4	31106,2	102235,9	225361,1	30908,9

Source: calculated according to the Main Department of Statistics in the Zaporizhia region [13]

own funds. Increasing the share of state participation in financing the innovative activities of Ukrainian enterprises remains an important issue. To intensify innovation in Ukraine, a new comprehensive mechanism is needed to stimulate the entire innovation process – from basic research to the implementation of developments in production. In order to activate production, scientific and innovative potential it is necessary to:

- improve the tools of legal regulation of innovation, especially in the field of protection of intellectual property rights;
- increase the volume of investments in scientific and innovative activities primarily by the state;
- increase the national security of the country;
- attract foreign investors;
- create of innovation infrastructure at the national and regional levels, which would ensure the effective use

of scientific and technical potential, increase the level of innovation and competitiveness of enterprises (business incubators, technology parks, technology transfer centers);

- develop and strengthen financial and credit institutions that ensure continuity of financing of innovative projects (venture companies, innovation funds);

- train highly qualified workers and their involvement in active industries to create new technologies;
- intensify international scientific and scientific-technical cooperation.

There is no close correlation between the volume of investment in innovation activities and the results of innovation activity of industrial enterprises. It is not necessary to count on the rapid effect of investments in innovation under the current conditions in Ukraine. Therefore, the state and legal entities should focus on long-term progressive results.

References

1. Baranovska S.P. Planning the development of innovative structures in the machine-building industry [Electronic resource] / S.P. Baranovska. Access mode: http://www.nbu.gov.ua/portal/natural/VNULP/Menagement/200S_62/24.pdf
2. Boychuk N.Ya. Influence of development strategy on the efficiency of the enterprise / N.Ya. Boychuk. *Scientific Bulletin of Kherson State University. Ser. : Economic Sciences*. 2016. Issue 18(1). P. 66–70. Access mode: [http://nbuv.gov.ua/UJRN/Nvkhdu_en_2016_18\(1\)_19](http://nbuv.gov.ua/UJRN/Nvkhdu_en_2016_18(1)_19)
3. Buzhymyska K.O. Some components of the theoretical and methodological basis of innovation and technological modernization [Electronic resource] / K.O. Buzhymyska. Access mode: http://www.ztu.edu.ua/ua/science/publishing/visnik/econom/4_50/44.pdf

4. Varnaliy Z.S. Competitiveness of the national economy: problems and priorities of innovation / Z.S. Varnaliy. Kyiv : Knowledge, 2013. 387 p.
5. Geets V.I. Innovative Ukraine 2020 : national report / for general. red. V.M. Heitz and others ; NAS of Ukraine. K., 2015. 336 p. : tab., fig. 1-66. ISBN 978-966-02-7615-4.
6. Datsy O.I., Haman M.V., Datsy N.V. Innovative model of economic development of Ukraine in the context of globalization : monograph. Donetsk : Yugo-Vostok, 2010. 368 p.
7. Kuzmin O.E. Factors of innovative development of enterprises [Electronic resource] / O.E. Kuzmin. Access mode: URL: [http:// donntu.edu.ua/2010/ier/yevdokimova/library/article5.htm](http://donntu.edu.ua/2010/ier/yevdokimova/library/article5.htm)
8. Silantiev S.O. Economic mechanisms of innovation-active enterprises / S.O. Silantiev. *Actual problems of economy* : scientific economic journal. K., 2012. № 5(143). S.122–140.
9. Fedulova L.I. Management innovations: socio-economic aspect : monograph / V.S. Kuybida and others ; for ed. V.S. Kuybida, O.M. Petroe, L.I. Fedulova ; Nat. acad. state ynp. under the President of Ukraine, Inst. of Expert Analysts. and science. research. Kyiv : NAPA, 2018. 302 p. : fig., tab. Bibliogr.: p. 277–302. ISBN 978-966-619-398-1.
10. Yanenkova I.G. Innovative activity of industrial enterprises of Ukraine: state and prospects of development / I.G. Yanenkova, S.S. Pozur, O.A. Kataeva. *Scientific works. Economy*. 2016. URL: <http://economy.chdu.edu.ua/article/view/107998>
11. State Statistics Service of Ukraine [Electronic resource]. Access mode: <http://www.ukrstat.gov.ua>
12. On the Recommendations of the Parliamentary Hearings on the topic “Strategy of Innovative Development of Ukraine for 2010–2020 in the context of globalization challenges” : Resolution of the Verkhovna Rada of Ukraine of October 21, 2010 № 2632-VI. URL: <http://zakon2.rada.gov.ua/laws/show/2632-17>
13. Main Department of Statistics in Zaporizhia Oblast [Electronic resource]. Access mode: <http://www.zp.ukrstat.gov.ua/>