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# ESTIMATION OF PROFITABILITY OF OPERATING ACTIVITY IN INDUSTRIAL ENTERPRISES OF UKRAINE IN THE CONDITIONS OF EXTERNAL ENVIRONMENTAL

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#### Key words:

estimation, profitability, operating activity, profitableness, factor analysis, functioning, efficiency, factors, industrial enterprises.

The article analyses the specifics of the functioning of industrial enterprises and examines the problems of growth of profitability in modern economic conditions. The important role of industry for the development of the state economy has been determined. The level of the unprofitableness of industrial enterprises, expenses of operational activity has been analysed. For a more informative idea of the current state of operational activity of industrial enterprises in Ukraine, an analysis of operational profitability indicators for a certain period has been conducted. To determine the reasons for changes in profitability and the identification of factors of influence, a factor analysis of the profitability of production has been conducted on an example of JSC "Motor Sich." The results of the analysis have been grouped by factors of influence on the level of profitability of operating activities of industrial enterprises. The main factors of influence include: low competitiveness of enterprises; deterioration in the quality of industrial products; wear of equipment; high level of tax pressure; high lending rates; increase in the cost price of products and decrease sales volumes; shortage of working capital and fixed assets; change in the share of profit for 1 hryvnia of sold products. It has been determined that decrease of profitability of operational activity of mechanical engineering enterprises is caused by a number of reasons: absence of investment capital; mismatch of production capacities of market potential and low level of their loading; rise in price of external financial resources; decrease in demand for products; the unity of the production process; failures in the supply of raw materials and materials; lack of financial support; ineffectiveness of the marketing department; rise in price of external financial resources. It has been determined that the decrease of operating profitability indicators of the enterprises of mechanical engineering of Zaporizhzhia region is due to: loss of market sales; high material production of machine building products; depreciation of fixed assets; decrease in the level of solvency of commodity producers; decrease of output; reduction of domestic demand for domestic products; an increase in the level of debt; unsecured high-quality materials. According to the results of the research of indicators of profitability of operational activity of enterprises of the industrial sector, ways of increasing the analysed indicators have been formed: withdrawal from production of lowprofitable products; concentration of production on highly profitable products; revision of tax rates for industrial enterprises; attraction of foreign investors; reconstruction of material and technical base of production and introduction of new technologies; introduction of effective financial management.

## ОЦІНКА РЕНТАБЕЛЬНОСТІ ОПЕРАЦІЙНОЇ ДІЯЛЬНОСТІ ПРОМИСЛОВИХ ПІДПРИЄМСТВ УКРАЇНИ В УМОВАХ ЗМІННОСТІ ЗОВНІШНЬОГО СЕРЕДОВИЩА

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## Ключові слова:

оцінка, рентабельність, операційна діяльність, прибутковість, факторний аналіз, функціонування, ефективність, чинники, промислові підприємства.

Досліджено специфіку функціонування промислових підприємств та розглянуто проблеми зростання рентабельності в сучасних умовах господарювання. Визначено важливу роль промисловості для розвитку економіки держави. Проаналізовано рівень збитковості промислових підприємств, витрати операційної діяльності. Для більш інформативного уявлення про сучасний стан операційної діяльності промислових підприємств в Україні проведено аналіз показників операційної рентабельності за визначений період. Для визначення причин зміни рентабельності та виявлення чинників впливу проведено факторний аналіз рентабельності виробництва на прикладі АТ «Мотор Січ». За результатами проведеного аналізу згруповано фактори впливу на рівень рентабельності операційної діяльності промислових підприємств. До основних факторів

впливу відносяться: низька конкурентоздатність підприємств; погіршення якості промислової продукції; зношеність обладнання; високий рівень податкового тиску; високі ставки кредитування; підвищення собівартості продукції та зниження обсягів реалізації; нестача обігових коштів та основних засобів; зміна частки прибутку на 1 гривню реалізованої продукції. Визначено, що зниження рентабельності операційної діяльності підприємств машинобудування обумовлено рядом причин: відсутність інвестиційного капіталу; невідповідність виробничих потужностей потенціалу ринків збуту та низький рівень їх завантаження; подорожчання зовнішніх фінансових ресурсів; зменшення попиту на продукцію; розлагодженість процесу виробництва продукції; збої в постачанні сировини та матеріалів; нестача фінансового забезпечення; неефективність роботи маркетингового відділу; подорожчання зовнішніх фінансових Установлено, що зниження показників рентабельності операційної діяльності підприємств машинобудування Запорізької області збумовлене: втратою ринків збут; високою матеріаломісткістю продукції машинобудування; зношеністю основних фондів; зниженням рівня платоспроможності товаровиробників; зменшенням випуску продукції; скороченням внутрішнього попиту на вітчизняну продукцію; зростанням рівня заборгованості; незабезпеченістю якісними матеріалами. За результатами дослідження показників рентабельності операційної діяльності підприємств промислового сектора сформовано шляхи аналізованих показників: зняття пілвишення виробництва 3 низькорентабельної продукції; зосередження виробництва високорентабельній продукції; перегляд податкових норм для промислових підприємств; залучення іноземних інвесторів; реконструкція матеріальнотехнічної бази виробництва та запровадження нових технологій; запровадження ефективного фінансового менеджменту.

#### Statement of the problem

The industrial sector plays an important role in the Ukrainian economy and has a significant social burden, providing jobs for more than 30% of the population employed in the national economy. In today's conditions of political and economic instability of Ukraine, there is a systematic decrease in production volumes at industrial enterprises, and their financial condition deteriorates significantly. There is a decline in exports in the long run, due to the fact that the traditional products of the Ukrainian industry are closed, and access to new ones is complicated by high requirements for product quality, low competitiveness and high cost as a result of the use of obsolete equipment and inefficient production technologies.

All of the above affects the performance of operational activities of industrial enterprises, and therefore it is necessary to carry out an analysis of the effectiveness of its implementation, which is most fully characterized by the level of profitability. The timely determination of the indicator of profitability of operational activities of industrial enterprises and the adoption of measures to improve it can be classified as one of the most important economic problems. This is due to the fact that the insufficient profitability of operating activity can lead to unplanned expenses, reduction of the desired financial result, loss-making and even bankruptcy.

### Analysis of recent studies and publications

The following scientists-economists made significant contributions to the study of the features of assessing the profitability of operating activities of enterprises, the definition of problems in operational activities and ways to overcome them, such as: T. Vasylyshyn [2, p. 11-20]; V.D. Voloboev [3, p. 18-23]; I.O. Engels [4, p. 82-84];

Ya.O. Mischenko [7, p. 50-55]; S.S. Sviridova, O.A. Pozhar [13, p. 93-95]; A.V. Cherep, O.H. Cherep, Y.O. Shvets [14; 15]. Therefore, O.V. Mikhaylenko, S.M. Nikolaenko, Y.O. Neroda [6, p. 279-282] analysed the profitability of Ukrainian enterprises in different areas of economic activity and formulated directions for increasing its efficiency.

Many scientists have focused on conducting the factor analysis of the profitability of production, products at industrial enterprises, for example, V.I. Otenko, V.V. Ivanienko, G.F. Azarenkov [8]. A.M. Lysenko and Yu.V. Kernasyuk carried out a factor analysis of the level of profitability of agricultural enterprises based on the use of the method of absolute differences [5, p. 152-156]. O.M. Saprykina analysed the influence of the selected factors on the amount of profit from the sale and determined the level of profitability from the sale of products [12, p. 20-23]. In his work, Bechko V.P. presented the factors influencing the profitability of agricultural enterprises and their ranking [1, p. 93-101].

Despite the significant contribution of scientists, it should be noted that the problem of assessing the profitability of operating activities of industrial enterprises and conducting factor analysis of profitability in the present conditions requires a more thorough analysis.

## Objectives of the article

The purpose of the article is to investigate the current state of the industrial sector, analyse the level of profitability of operational activities of industrial enterprises in Ukraine and Zaporizhzhia region, conduct factor analysis of profitability, identify problems in the activities and ways to increase the efficiency of industrial enterprises.

#### The main material of the research

Industry is not only the leading industry in the manufacturing sector, but also the entire national economic complex of Ukraine. Its pace of development largely determines the quality and orientation of the country's economic growth. Unfortunately, in the last few years, domestic industrial development reflects negative trends and deteriorates the efficiency of the activity of each of the industries [4, p. 82-84].

Therefore, the study of operational activities of industrial enterprises and the gradual elimination of the problems associated with it is very important. According to the survey, more than 1100 enterprises of the processing industry (including machine-building), the State Statistics Service of Ukraine outlines, the following key factors restrain the corresponding production: insufficient

demand; financial constraints; lack of raw materials, equipment; lack of labour force [2].

Despite the considerable interest of economists in the study of the main types of industry, the results of financial and economic activity, it is necessary to conduct a more profound analysis of the profitability of operating activities of enterprises. It is the indicators of profitability that characterize the efficiency of the enterprise in general, the profitability of different activities (production, business, investment), payback costs [4].

Before starting to analyse the profitability of the industrial sector, it is advisable to pay attention to the number of business entities in Ukraine and Zaporizhzhia region who worked in the industry during 2015-2017 (Fig. 1-2) [6; 7].

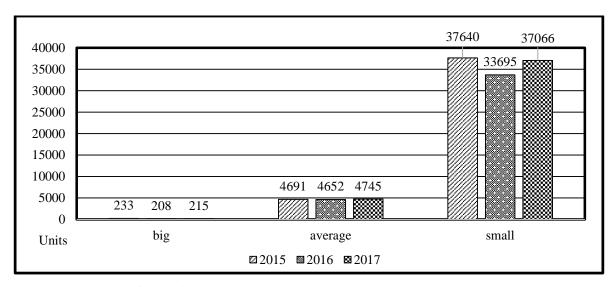


Fig. 1. Number of industrial enterprises in Ukraine during 2015-2017, units (note is based on [11])

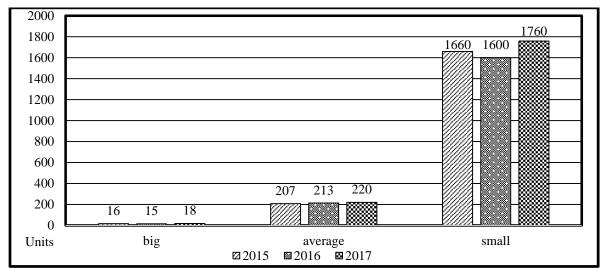


Fig. 2. Number of industrial enterprises in Zaporizhzhia oblast during 2015-2017, units (note is based on [10])

The largest share among enterprises of the industrial sector of Ukraine is occupied by small business entities, then – the average, and the smallest – large industrial enterprises. In 2016, their total number in Ukraine as a whole decreased by 4009 units, which is -9,42% growth compared to 2015. However, in 2017, the total number of

industrial enterprises increased by 3471 units, which is + 9% growth relative to the previous year.

The ultimate result of the activities of enterprises (including industrial ones) is the magnitude of their profit or loss. The result of operating activities of industrial enterprises in Ukraine for 2015-2017 is presented in Fig. 3.

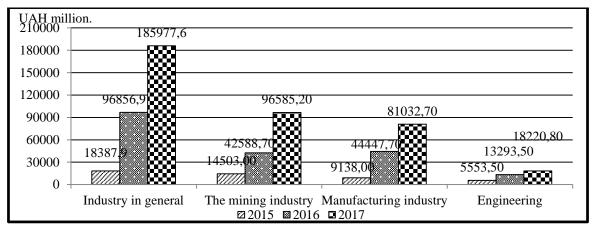


Fig. 3. The result of operating activities in Ukraine for 2015-2017, UAH million (note is based on [11])

During 2015-2017 the profit from operating activities of industrial enterprises of Ukraine was profitable. It had a growing tendency: in 2015 – UAH 18387,9 million, in 2016 – increased by +78469,00 million UAH, in 2017 – UAH 185977,6 million. (+ 92,01% growth relative to 2016).

The largest profit from operating activities in the industrial sector of Ukraine during 2015-2017 was concentrated in the extractive industry. Thus, in 2015 it amounted to 14503 million UAH and in 2016 the profit from operating activities of the extractive industry increased by +28085,7 million UAH, which is + 193,65% growth, and in 2017 – by +53996,5 million UAH, which is + 126,79% increase.

The manufacturing industry in 2015-2017 was second only to Ukraine in terms of operating profit. It was characterized by an increase of + 386,41% in 2016 and + 82,31% in 2017.

At the same time, the profit from operating activities in machine building was also: in 2015 - UAH 5553,5

million, in 2016 – UAH 777 million. More in 2017 – grew to UAH 18220,8 million. (+ 37,07% increase).

During 2015-2017, the result of operating activities of industrial enterprises in the Zaporizhzhia region was a profit. He had a growing tendency: in 2015 – UAH 12077,86 million, in 2016 – increased by +5891,06 million UAH, in 2017 – UAH 21793,88 million. (+21,29% growth relative to 2016).

The processing industry in the Zaporizhzhia region was considered the leading industry and brought about 80% of operating profit. At the same time, the operating profit of the machine building was almost 3 times lower than in the processing industry and about 10 times higher than in mining.

When investigating the operational activities of enterprises of the industrial sector, it is necessary to take into account, not only the result from operating activities, but also the costs incurred for this purpose. Thus, the costs of operating activities of industrial enterprises in Ukraine for 2015-2017 are presented in Fig. 4.

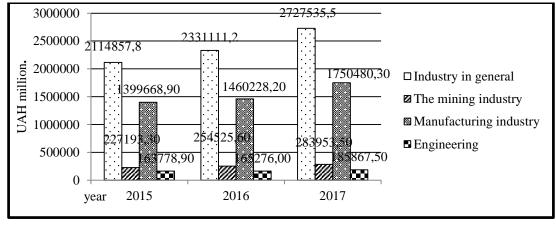


Fig. 4. Costs of operating activities of industrial enterprises in Ukraine for 2015-2017, mln. (note is based on [11])

Operating costs for the industry in general during 2015-2017 tended to increase. From the analysed data, we see that for the analysed period, the largest share of operating expenses of the industrial sector of the Zaporizhzhia region and Ukraine was concentrated in the processing industry. Its share in the overall structure of expenditures amounted to an average of 64,33% and 79%, respectively, in Ukraine and Zaporizhzhia region. It is

worth noting that the operating profit was less than the cost of operating activities of industrial enterprises.

For a more thorough analysis of the current state of operational activity of industrial enterprises in Ukraine, it is appropriate to conduct a preliminary analysis of profitability indicators for operating activities in previous years (Table 1).

Table 1 – The level of profitability of operational activity of industrial enterprises in Ukraine for 2015-2017, %

Показник	years			Absolute deviation		Relative deviation	
	2015	2016	2017	2016/2015	2017/2016	2016/2015	2017/2016
Industry as a whole	0,9	4,2	6,8	3,3	2,6	366,67	61,90
Mining and quarrying	6,4	16,7	34	10,3	17,3	160,94	103,59
Manufacturing industry	0,7	3	4,6	2,3	1,6	328,57	53,33
engineering	3,4	8	9,8	4,6	1,8	135,29	22,50
production of computers, electronic and optical products	6,3	12	13,3	5,7	1,3	90,48	10,83
production of electrical equipment	-1,5	8,1	7,1	9,6	-1	440,00	-12,35
manufacture of machinery and equipment not attributed to other groups	3,2	8,2	7,8	5	-0,4	156,25	-4,88
production of motor vehicles, trailers and semi-trailers and other vehicles	5,5	6,9	12,6	1,4	5,7	25,45	82,61
manufacture of furniture, other products; repair and installation of machinery and equipment	1	-4,4	5,4	-5,4	9,8	-540,00	222,73

Note is based on [11]

Analyzing Tabl. 1 it can be concluded that the profit from operating activities of enterprises of the industrial sector in Ukraine as a whole during 2015-2017 from 1 UAH. incurred operating expenses was insignificant. So, in 2015 it was 1 kopeck, in 2016 – 3 kopecks more, in 2017 – 7 kopecks.

The level of profitability of operating activities of industrial enterprises in Ukraine as a whole in the period of 2015-2017 was a tendency to increase. Thus, in 2016, compared to 2015, the indicator was increased by 3,3% and in 2017, relative to 2016, the growth rate of profitability in Ukraine was lower and amounted to 2,6%.

Analysing extractive industry, it should be noted that the indicator of the level of profitability of the operating activities in 2016 increased 1,6 times relative to 2015, and in 2017, compared with 2016 almost doubled, which is + 103.59% growth. At the same time, the processing industry during 2015-2017 was characterized by an average level of profitability of operating activity.

The level of operating profitability of the machine building in Ukraine during 2015-2017 has increased from 3,4% to 9,8%.

Based on the analysis of types of machine building, we see that the level of profitability of operating activities had the following dynamics: there was an increase in production of computers, electronic and optical products by 5,7% in 2016 and by 1,3% in 2017 relative to the level of the previous one; the production of electrical equipment had a negative value in 2015 (-1,5%), in 2016 – increased by 9,6% and in 2017 – decreased to 7,1% (-12,35% growth). In the manufacture of machinery and equipment that cannot be attributed to other groups, in 2016, it grew to 5% (+ 156,25% growth), however, already in the following year it decreased by -0,4%; The production of motor vehicles, trailers and semi-trailers and other vehicles grew by 1,4% in 2016 and by 5,7% in 2017 relative to the level of the previous one.

Along with the above calculations, the indicator of the level of profitability of operational activity of enterprises of the industrial sector in the Zaporizhzhia region is also analysed (Table 2).

Table 2 – The level of profitability of operating activities of industrial enterprises in Zaporizhzhia oblast for 2015-2017, %

Indicator	Years			Absolute deviation		Relative deviation	
	2015	2016	2017	2016/2015	2017/2016	2016/2015	2017/2016
Industry as a whole	9,5	13,1	12,6	3,6	-0,5	37,89	-3,82
Mining and quarrying	17,5	21,7	55,1	4,2	33,4	24,00	153,92
Manufacturing industry	15	14,6	13,7	-0,4	-0,9	-2,67	-6,16
engineering	25	18,9	22,4	-6,1	3,5	-24,40	18,52
production of computers, electronic and optical products	12,7	8,6	6,8	-4,1	-1,8	-32,28	-20,93
production of electrical equipment	11,7	19,6	15,4	7,9	-4,2	67,52	-21,43
manufacture of machinery and equipment not attributed to other groups	10,8	11,6	12	0,8	0,4	7,41	3,45
production of motor vehicles, trailers and semi-trailers and other vehicles	30,5	20,7	28,5	-9,8	7,8	-32,13	37,68
manufacture of furniture, other products; repair and installation of machinery and equipment	2,5	4	2,5	1,5	-1,5	60,00	-37,50

Note is based on [10]

Analysing Tabl. 2 it is possible to conclude that the profit gained from operating activities of enterprises of the industrial sector in the Zaporizhzhia region during 2015-2017 from 1 UAH the incurred operating expenses was somewhat higher than in the whole of Ukraine and stayed at the level of 10-13 kopecks.

The level of operating profitability of the machine building in the Zaporizhzhia region for the analysed period was quite good. The obtained profitability indicators of operating activities of enterprises of the industrial sector of Ukraine tended to slightly increase in 2017 relative to 2016. However, the level of profitability

of operational activity of enterprises of the industrial sector of Ukraine is influenced by many factors, which reflect different aspects of their activity. It is possible to achieve the desired profitability indicators by regulating the influence of these factors.

In order to clarify and determine the influence of factors on the profitability of industrial enterprises, factor analysis was performed using a method of chain substitutions. Therefore, the analysis of the factors influencing the profitability of production on an example of JSC "Motor Sich" (Table 3) was carried out.

Table 3 – Factor analysis of the level of profitability of JSC «Motor Sich» for 2016-2017

Indicator	2016	2017	Deviation (+,-)
1. Balance profit, ths. UAH	6328964	8462431	2133467
2. Volume of sales, ths. UAH	5471311,4	10987968	5516656,6
3. Average annual cost of fixed assets, ths. UAH	6088683,5	6738988,5	650305
4. Average annual balances of working capital, ths. UAH.	16489662,5	20009611,5	3519949
5. Average annual value of assets, ths. UAH	22871576,5	27247020,5	4375444
6. Net income from sales of products (goods, works, services), ths. UAH.	10546207	15150429	4604222
7. The coefficient of the stock of products	1,11	0,61	-0,50
8. Factoring factor for working capital	1,56	1,32	-0,24
9. Profit for UAH 1 sold products	1,16	0,77	-0,39
10. The level of profitability of the enterprise, %	27,67	31,06	3,39
11. The level of profitability of production, %	103,95	125,57	21,63

Note is based on [9]

According to the data obtained, we see that the decrease of the coefficient of the stock of products in 2017 led to an increase in profitability by 6,6 points, since 0,77 / (0.61 + 1.56) \* 100% = 35.38 and 35.38 - 28.77 = 6.6. Similarly, a profit reduction of 1 UAH of sold products in 2017 resulted in a decrease in the profitability rate by 75,17 points (28,77-103,95 = 75,17), where 0,77 / (1,11)+ 1,56) \* 100% = 28,77. The reduction in working capital fixing ratio in 2017 resulted in an increase in the profitability of production by 90,20 points (125,57-35,37 = 90,20). Taking into account the influence of factors, it was found that the increase in profitability by the determined factors is 21,63 (90,20 + 6,6-75,17 = 21,63) and this indicator corresponds to the estimated change in the profitability of production in 2017 against 2016 (21,63%). At JSC "Motor Sich" in 2017 against 2016 there is a gradual increase in the profitability of production and in general on the company, but the analysed factors should be taken into account in order to increase profitability and identify the reasons for its decrease.

Among the factors that influenced the level of profitability of operating activities and the profitability of industrial enterprises during 2015-2017, one can distinguish:

 changes in tariffs and prices for supply of products as a result of inflation;

- low competitiveness and quality of industrial products through the use of obsolete equipment and machinery;
- imperfection of Ukrainian legislation and high level of taxation of enterprises;
- insufficiency of working capital, fixed assets;
- lack of own financial resources;
- imperfection of the mechanism of medium- and long-term lending to producers and consumers of products, high lending rates;
- reduction of net income from sales of products and high production cost;
- innovative development in the technology market and the emergence of new equipment;
- change in the share of profit for 1 hryvnia of sold products;
- decrease in volumes of production and sales of products.

Based on the results of the analysis of the functioning of the machine-building enterprises in Ukraine as a whole during 2015-2017, it can be said that they play an important role in strengthening the industry and the economic state of the state. However, in Ukraine there is a problem of relatively low profitability of operating activities of mechanical engineering enterprises, which is due to the following: there is a predominance of metalconsuming industries and at the same time insufficient development of high-tech; real investments are practically absent; there is a mismatch between the production capacity of the market potential and the low level of its loading; insufficient control by the state for the activities of monopolists and intermediaries; there is a significant dependence of machine building on the situation on foreign markets; there is a sharp rise in the cost of external financial resources.

Taking into account the state of machine-building in the Zaporizhzhia region, it can be said that during 2015-2017 it developed quite well. Despite the fact that the operating profitability of the mechanical engineering enterprises was relatively sufficient, they encountered a number of problems in their activities. Thus, the decline in the profitability of operating activities of mechanical engineering enterprises during 2015-2017 is due to: loss of sales markets, reduction of exports; critical depreciation of fixed assets; high resource, energy and material resources of machine building products; irrational use of existing production facilities; decrease of output; insufficient level of solvency of commodity producers, which negatively affects the financial and economic state of the enterprises of mechanical engineering; limited domestic demand for domestic products.

After examining the indicators of profitability of operational activities of enterprises of the industrial sector and finding out the factors of influence on the level of profitability, we can propose ways to increase the analysed indicators. The main ways to increase the profitability of enterprises in the industrial sector should be: concentration of production on highly profitable products; withdrawal from the production of low-cost products; increase in volumes of production and sales of products; rational use of working capital; reconstruction of material and technical base of production and introduction of new technologies; revision of tax rates for industrial enterprises; accumulation of fixed capital; avoiding unnecessary expenses (penalties, fines, penalties and penalties); increase of competitiveness on the domestic and foreign markets; decrease in amounts of debt; use of quality raw materials and materials;

attraction of foreign investors; introduction of effective financial management.

#### **Conclusions**

For the successful functioning and development of the industrial sector, it is necessary to maintain an appropriate level of profitability of operational activity, because the effective activity of industrial enterprises depends on the profit. The largest profit from operating activity in the industrial sector of Ukraine during 2015-2017 was observed in the extractive industry and among the industry of the Zaporizhzhia region the leading industry was considered as the leading one (about 80% of operating income). The analysis of indicators of profitability of operational activity of industrial enterprises of Ukraine and Zaporizhzhia region shows that the industry is experiencing a recession due to the negative impact of crisis phenomena on the economy. However, it is necessary to distinguish extractive industry, which for the analyzed period was the most profitable type of industrial activity in Ukraine and Zaporizhzhia oblast, had a growing tendency.

The results of the factor analysis of the profitability of the enterprise's production allowed to determine the list of factors that have a greater impact on profitability and the reasons for its change, which will allow in future periods to take measures to increase profitability. The low level of operating profitability of most enterprises in the industrial sector was due to low competitiveness, high cost of production, imperfect Ukrainian legislation in the field of taxation, high lending rates. At industrial enterprises there is a need to increase the profitability of operational activities by reconstructing the material and technical base of production, introduction of new technologies, reduction of penalties, increase of investment capital, increase of production volumes and sales of products on the markets. Consequently, it is advisable to increase the profitability of operational activities at domestic industrial enterprises in order to increase the stability of functioning, financial stability, indicators of production and economic, trade activity and management of the corresponding activity.

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