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FEATURES OF THE ANALYSIS OF FIXED ASSETS IN THE CONTEXT OF MANAGING THE EFFICIENCY OF THEIR USE

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fixed assets, strategic management, tactical management, analysis, efficiency, capital return, profitability, evaluation.

The article reveals the peculiarities of the method of analysis of fixed assets as an important component of the enterprise's production potential. Fixed assets are the main component of the production potential of any enterprise. Accordingly, an important point is the analysis of fixed assets at the enterprise, the quality of work, product competitiveness and the results of the enterprise's financial and economic activity depend on the efficiency and intensity of their use. With the change in the information needs of investors and analysts, the improvement of methods of economic activity analysis in accordance with the requests of the management system, the issue of forming a system of key indicators for the analysis and objective assessment of the performance of enterprises is urgent. According to the meaning and role of the analysis, the main tasks and stages of the process of analysis of fixed assets are defined. The scientific approaches of various scientists regarding the allocation of groups of indicators regarding the analysis of fixed assets are summarized. A system of indicators has been formed for the analytical study of the assessment of the use of fixed assets, which provides for three groups of indicators: a group of indicators for assessing the technical condition (reproduction) of fixed assets, a group of generalizing indicators and a group of partial indicators. Features of the factor analysis of the efficiency of the use of fixed assets are determined. The directions for increasing the efficiency of the use of fixed assets at the enterprise are substantiated.

ОСОБЛИВОСТІ АНАЛІЗУ ОСНОВНИХ ЗАСОБІВ В КОНТЕКСТІ УПРАВЛІННЯ ЕФЕКТИВНІСТЮ ЇХ ВИКОРИСТАННЯ

Пушкарь І.В., Зачепило Д.А.*Запорізький національний університет**Україна, 69600, м. Запоріжжя, вул. Жуковського, 66***Ключові слова:**

основні засоби, стратегічне управління, тактичне управління, аналіз, ефективність, фондовіддача, рентабельність, оцінка.

У статті розкриваються особливості методики аналізу основних засобів як важливої складової виробничого потенціалу підприємства. Основні засоби виступають основною складовою виробничого потенціалу будь-якого підприємства. Відповідно, важливим моментом є здійснення аналізу основних засобів на підприємстві, від ефективності та інтенсивності використання яких залежить якість роботи, конкурентоспроможність продукції та результати фінансово-господарської діяльності підприємства. Із зміною інформаційних потреб інвесторів, аналітиків, удосконаленням методів аналізу господарської діяльності у відповідності до запитів системи управління, актуальним є питання формування системи ключових показників для аналізу та об'єктивної оцінки ефективності діяльності підприємств. Відповідно до значення та ролі аналізу, визначено основні завдання та етапи процесу аналізу основних засобів. Узагальнено наукові підходи різних науковців щодо виділення груп показників щодо проведення аналізу основних засобів. Сформовано систему

показників для аналітичного дослідження оцінки використання основних засобів, що передбачає три групи показників: група показників оцінки технічного стану (відтворення) основних засобів, група узагальнюючих показників та група часткових показників. Визначено особливості факторного аналізу ефективності використання основних засобів. Обґрунтовано напрями підвищення ефективності використання основних засобів на підприємстві.

Statement of the problem

The economic activity and financial condition of the enterprise largely depend on the provision of fixed assets and their use, as the obsolescence and significant wear and tear of the main means of production leads to a decrease in production volumes, deterioration of the quality of manufactured products and, as a result, is one of the reasons for the decrease in the profitability of the enterprise.

Conducting a study of the economic efficiency of the use of fixed assets and ways to increase it is extremely relevant, because in the conditions of a market economy and competition, those manufacturers who effectively use their resources, in particular, the main means of production, function successfully. Improving the quality of enterprise management is associated with the application of modern methods of assessing the state of fixed assets, analysis and planning their development, with the formation of a comprehensive approach to assessing the mutual influence of indicators of the financial and economic activity of the enterprise and indicators of effective use of assets. The search for ways to increase the efficiency of the use of fixed assets is one of the most urgent issues in the management policy of the enterprise as a whole. Also, in modern conditions, the formation of complete information about economic processes is impossible without information about the main assets, analysis and evaluation of their rational use, because the vital activity of the enterprise and the ability to produce competitive products depend on this.

Analysis of recent studies and publications

Organizational and methodological approaches to the analysis of the effectiveness of the use of fixed assets in accordance with the requests of the management system were studied by many scientists, among whom it is worth highlighting such as O.M. Haydayenko [1], E.P. Hnatenko [2], N.Yu. Yershova [3], I.P. Malikova [6], V.V. Pokynchereda [8], A.M. Tkachenko [10], T.S. Zadnipyranina [10], A.I. Tanchyn [11], S.V. Shubina [12], V.A. V.A. Malakhov [12]. Strategic aspects of the method of analysis of fixed assets were studied by N.Yu. Yershova [4], I.V. Pushkar [9]. Sectoral features of the analysis of fixed assets, taking into account the specifics of their use in agriculture, are devoted to the work of O.V. Yehorova, L.O. Dorohan-Pysarenko, A.E. Rudych [5] and T.O. Mulyk. However, there are debatable issues that require further research regarding: distinguishing the stages of analysis; the question of choosing from a large number of analytical indicators those that are really capable of providing a comprehensive analytical assessment; improvement of the analysis methodology taking into account the peculiarities of economic activity and the use of fixed assets at the tactical and strategic levels.

Objectives of the article

The purpose of the article is to research and generalize methodological approaches, as well as to highlight the features of the analysis of the use of fixed assets to substantiate the key indicators of the analytical assessment, which will contribute to the effective management of fixed assets in the context of ensuring the long-term functioning and development of enterprises.

The main material of the research

Fixed assets are the main element of the production process, as a result of which products are created, services are provided and work is performed. And with the modern technical level of production, the main means and their technical condition determine the potential possibilities of production, its capacity.

Timely and comprehensive analysis of the state of use of fixed assets is of particular importance in order to ensure an effective capital asset management policy. And it is based on the results of the analysis that the amount of financial resources necessary to ensure the optimal structure of fixed assets and efficient functioning of the enterprise is determined.

Therefore, among the priority tasks of the analysis of the use of fixed assets of the enterprise, it is possible to single out: determination of the peculiarities of production conditions, the specifics of conducting economic activity and the use of fixed assets for the financial and economic indicators of the enterprise's activity; study of the composition, structure and dynamics of fixed assets; determination of technical condition assessment indicators (reproduction) of fixed assets; assessment of the effectiveness of the use of fixed assets based on general indicators; substantiation of directions for improving the use of fixed assets at the enterprise [6, p. 174].

Accordingly, a system of indicators is used to analyze and evaluate the state and efficiency of the use of fixed assets, which characterize the volume of fixed assets, their growth rates for the corresponding periods, the ratio of individual groups in the total value of fixed assets, the share of the active part, reasons for changes in their volumes and structure.

Indicators characterizing the enterprise's provision of fixed assets include: capital intensity, capital adequacy, the coefficient of the real value of the main means of production in the enterprise's property. Summarizing indicators of the efficiency of the use of fixed assets are return on capital, the inverse indicator of return on capital – capital intensity of products and profitability [1]. Let's analyze the indicators of the efficiency of the use of fixed assets at the enterprise (Table 1).

Analyzing the obtained indicators, it can be concluded that the efficiency of the use of fixed assets increases. The

Table 1 – Evaluation of indicators of the efficiency of the use of fixed assets

Indexes	2021	2022	Dynamics	
			D	rel, %
Sales volume, thsd UAH	38784	60526	21742	156,06
Average annual cost of health insurance, thsd UAH	53464	53124,5	-339,5	99,36
Profit from operating activities, thsd UAH	2574	-2407	-4981	-93,51
Fund return, UAH/UAH	0,73	1,14	0,41	157,06
Capital capacity, UAH/UAH	1,38	0,88	-0,50	63,67
FA profitability, %	4,81	-4,53	-9,34	-94,18

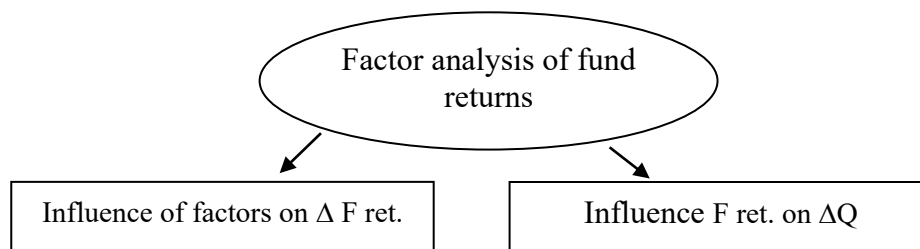


Figure 1 – Directions of factor analysis of fund returns

Table 2 – Models of factor analysis of fund returns

Influence of factors on D	Influence F _{ret} on D
$F_{ret} = Q / \overline{S_{FA}}$	$\Delta Q = \overline{S_{FA}} \times F_{ret}$
Taking into account the influence of the active part: $F_{ret} = P_{act.p.} \times F_{ret.act.p.}$	Detailing on the active part: $\Delta Q = \overline{S_{FA}} \times P_{act.p.} \times F_{ret.act.p.}$
Use of machines and equipment in the active part of fixed assets: $F_{ret} = P_{act.p.} \times P_{m.act.p.} \times F_{ret.m.}$	Use of machines and equipment in the active part of fixed assets: $\Delta Q = \overline{S_{FA}} \times P_{act.p.} \times P_{m.act.p.} \times F_{ret.m.}$
Fund return of technical equipment $F_{ret}^{TE} = \frac{N \times FWT_i \times HP_i}{\overline{S_{FA}}}$	Use of equipment time spent: $\Delta Q = N_{w/hour} \times Y_{1w/hour}$
Extension of the model due to the detailing of the working time fund: $FWT = D \times C_{var} \times T$ $F_{ret}^{TE} = \frac{N \times D \times C \times T \times HP_i}{\overline{S_{FA}}}$	$\Delta P_{FA} = F_{ret} \times P_{s.p.} \times Pr_{s.p.}$

Source: summarized by the author based on [2, 3, 10, 11]

capital return on fixed assets increased by 57.06%. This means that in 2022 from UAH 1. of the cost of fixed assets, the company received products worth UAH 1.14, which is UAH 0.41. more than in the past. Accordingly, in order to obtain products for UAH 1, it is necessary to use fixed assets worth UAH 0.88, which by UAH 0.50. less than in 2021. As for the profitability of fixed assets, in 2021 the company received from UAH 1. fixed assets 4.81 kopecks. profit, and in 2022 there will be a significant decrease in the indicator, i.e. unprofitable activity (for 1 UAH of fixed assets, 4.53 kopecks of loss).

We will conduct a factor analysis of the resulting performance indicators, namely: fund returns in two directions,

which are presented in fig. 1, volume of production and profitability of fixed assets.

Factor models of fund returns are shown in Table 2.

At the next stage, using some of the models listed in the table. 2, we will conduct a factor analysis of the fund return indicator.

$$F_{ret0} = \frac{Q_0}{S_{FA0}} = \frac{38784}{53464} = 0,73 \text{ UAH}$$

$$F_{ret\ subj1} = \frac{Q_1}{S_{FA0}} = \frac{60526}{53464} = 1,13 \text{ UAH}$$

$$\Delta F_{ret Q} = F_{ret}^{subj 1} - F_{ret0} = 1,13 - 0,73 = +0,4 \text{ UAH}$$

$$F_{ret}^{subj 2} = \frac{Q_1}{S_{FA1}} = \frac{60526}{53124,5} = 1,14 \text{ UAH}$$

$$\Delta F_{ret \frac{S_{FA}}{}} = F_{ret}^{subj 2} - F_{ret}^{subj 1} = 1,14 - 0,73 = +0,41 \text{ UAH}$$

$$BC: 1,14 - 0,73 = +0,4 + 0,01 + 0,41 = +0,41$$

Increase in fund return by UAH 0.41. occurred as a result of the influence of 2 factors. Due to the increase in the volume of sales by 21,742 thsd.UAH return on investment increased by UAH 0.4, and due to the decrease in the cost of fixed assets by 339.5 thsd.UAH fund return increased by UAH 0.01.

Let's determine the impact of the fund return on Q realization:

$$\Delta Q = \overline{S_{FA}} \times F_{ret}$$

$$Q_0 = \overline{S_{FA0}} \times F_{ret0} = 53464 \times 0,73 = 38784 \text{ thsd.UAH}$$

$$Q^{subj1} = \overline{S_{FA1}} \times F_{ret0} = 53124,5 \times 0,73 = 38538 \text{ thsd.UAH}$$

$$\Delta Q_{\frac{S_{FA}}{}} = Q^{subj1} - Q_0 = 38538 - 38784 = -246 \text{ thsd.UAH}$$

$$Q^{subj2} = \overline{S_{FA1}} \times F_{ret1} = 53124,5 \times 1,14 = 60526 \text{ thsd.UAH}$$

$$\Delta Q_{Fret} = Q^{subj2} - Q^{subj1} = 60526 - 38538 = +21988 \text{ thsd.UAH}$$

$$BC: 60526 - 38784 = -246 + 21988 \text{ thsd.UAH} + 21742 = +21742$$

The total change in the volume of sales was 21,742,000 UAH caused by 2 factors: a decrease in the average annual cost of fixed assets by 339.5 thsd.UAH led to a decrease in the volume of production by 246,000 UAH. Increase in fund yield by 0.41 UAH led to an increase in the volume by 21,988,000 UAH.

We will conduct a factor analysis of the profitability of fixed assets by the method of chain substitutions:

$$P = \frac{Pr}{S_{FA}}$$

$$P_0 = \frac{Pr_0}{S_{FA0}} = \frac{2574}{53464} \times 100 = 4,81\%$$

$$P^{subj1} = \frac{Pr_1}{S_{FA0}} = \frac{-2407}{53464} \times 100 = -4,50\%$$

$$\Delta P_{Pr} = P^{subj1} - P_0 = -4,5 - 4,81 = -9,31\%$$

$$P^{subj2} = \frac{Pr_1}{S_{FA1}} = \frac{-2407}{53124,5} \times 100 = -4,53\%$$

$$\Delta P_{\frac{S_{FA}}{}} = P^{subj2} - P^{subj1} = -4,53 + 4,5 = -0,03\%$$

$$BC: -4,53 - 4,81 = -9,31 - 0,03 - 9,34 = -9,34$$

In general, the profitability of fixed assets decreased by 9.34%. The decrease in profitability by 9.31% is caused by a decrease in profit by 4,981 thsd. UAH, and due to a decrease in the cost of fixed assets by 339.5 thsd. UAH profitability decreased by 0.03%.

For an in-depth analysis of fund return, we take into account the influence of the active part of fixed assets and its efficiency of use (Table 3).

For analysis, we will use the following factor model:

$$F_{ret} = P_{act.p.} \times F_{ret.act.p.}$$

$$F_{ret0} = P_{act.p.0} \times F_{ret.act.p.0} = 0,4603 \times 1,58 = 0,73 \text{ UAH}$$

$$F_{ret}^{subj1} = P_{act.p.1} \times F_{ret.act.p.0} = 0,4588 \times 1,58 = 0,72 \text{ UAH}$$

$$\Delta F_{ret \text{ Pact.p.}} = F_{ret}^{subj1} - F_{ret0} = 0,72 - 0,73 = -0,01 \text{ UAH}$$

$$F_{ret}^{subj2} = P_{act.p.1} \times F_{ret.act.p.1} = 0,4588 \times 2,48 = 1,14 \text{ UAH}$$

$$\Delta F_{ret \text{ Fret act.p.}} = F_{ret}^{subj2} - F_{ret}^{subj1} = 1,14 - 0,72 = 0,42 \text{ UAH}$$

$$BC: 1,14 - 0,73 = -0,01 + 0,42 + 0,41 = +0,41$$

Fund return increased by 0.41 UAH, at the same time, due to a decrease in the share of the active part by 0.15%, the fund return decreased by 0.01 UAH, and due to an increase in the fund return of the active part by 0.9 UAH total fund return increased by 0.42 UAH.

We will determine the impact on the change in the volume of production due to detailing on the active part, we will conduct factor analysis using the method of absolute differences:

$$\Delta Q = \overline{S_{FA}} \times P_{act.p.} \times F_{ret.act.p.}$$

Table 3 – Calculation of indicators for factor analysis

Indexes	2021	2022	Dynamics	
			Δabs,+-	rel, %
Scope of implementation, thsd UAH	38784	60526	21742	156,06
Average annual cost FA, thsd UAH	53464	53124,5	-339,5	99,36
including machines and equipment, thsd UAH	24611	24377,5	-233,5	99,05
Calculated indicators:				
Specific gravity of the active part FA	0,4603	0,4588	-0,0015	-
General fund return, UAH/UAH	0,73	1,14	0,41	-
Fund return of the active part, UAH.	1,58	2,48	0,9	-

$$Q_0 = \overline{S_{FA0}} \times P_{act.p.0} \times F_{ret.act.p.0} = 53464 \times 0,4603 \times 1,58 = 38784 \text{ thsd.UAH}$$

$$\Delta Q_{FA} = \Delta_{abs} \overline{S_{FA1}} \times P_{act.p.0} \times F_{ret.act.p.0} = -339,5 \times 0,4603 \times 1,58 = -246,3 \text{ thsd.UAH}$$

$$\Delta Q_{Pact.p.} = \overline{S_{FA1}} \times \Delta_{abs} P_{act.p.} \times F_{ret.act.p.0} = 53124,5 \times (-0,0015) \times 1,58 = -121,7 \text{ thsd.UAH}$$

$$\Delta Q_{Fret.act.p.} = \overline{S_{FA1}} \times P_{act.p.1} \times \Delta_{abs} F_{ret.act.p.} = 53124,5 \times 0,4588 \times (+0,9) = +22110 \text{ thsd.UAH}$$

$$BC: 60526 - 38784 = -246,3 - 121,7 + 22110 + 21742 = +21742$$

The volume of sales increased by 21,742 thsd.UAH. Reduction of the average annual cost of fixed assets by 339.5 thsd.UAH led to a decrease in the volume of production by 246.3 thsd.UAH, a decrease in the share of the active part by 0.15% led to a decrease by 121.7 thsd.UAH. At the same time, the increase in the fund return of the active part by 0.9 UAH led to an increase in the volume by 22,110,000 UAH. In general, the return on investment has increased, but the negative impact has a decrease in the share of the active part of fixed assets, which is a reserve for increasing the return on investment.

Therefore, in the process of analyzing the condition and efficiency of the use of fixed assets, the entire arsenal of methodological techniques is used, but the most common and information-rich is the coefficient analysis, which, based on the calculation of the ratio of absolute values, characterizes various aspects of the formation, use and reproduction of the fixed assets of the enterprise [8]. The results of the factor analysis make it possible to identify reserves for increasing the efficiency of the use of fixed assets, the implementation of which will contribute to: increasing the volume of production without additional capital investments for products that are in demand; reduction of costs per unit of production to increase profitability; reduction of costs from wear and tear of equipment and machines [5]. A set of measures to improve the use of fixed assets at the enterprise are identified, namely: increasing extensive loading – a type of reproduction that finds its expression primarily in increasing the working time of fixed production assets (extensive loading has certain limits); increasing the intensive load is a type of reproduction, due to which the return of labor resources per unit of time increases (this direction has much wider opportunities for improving the use of fixed assets and production capacities, which involves increasing the degree of loading of equipment per unit of time) [7].

It should also be noted that analytical information on the movement and efficiency of the use of fixed assets at the enterprise can influence the adoption of a number of management decisions of a strategic and tactical nature.

Strategic management of the company's main assets is a management activity that ensures the achievement of

long-term goals and the solution of long-term tasks based on the activation of the existing development potential and taking into account the influence of the changing external environment. Tactical management of fixed assets involves the achievement of current goals and objectives related to their effective use, based on the realization of the internal capabilities of the enterprise [4]. Accordingly, in order to substantiate a rational methodology of analysis, it is necessary to take into account the features inherent in the management of fixed assets, namely: shifting the focus of analysis from the internal to the external business environment; improving the system of indicators that characterize the effectiveness of the use of capital assets for the purposes of analysis, as well as their compliance with tactical and strategic goals.

Therefore, for the management system in the context of ensuring the effective implementation of the company's development strategy, it is advisable to apply a comprehensive analysis with a combination of elements of both traditional management analysis and financial and strategic analysis. Based on the results of such an analysis, not only information is formed about the availability, structure, movement and efficiency of use, but also additional information: about the impact of fixed assets on indicators of the financial condition and financial results of the enterprise; about factors of the external and internal business environment, the degree of their influence on fixed assets within the framework of strategic management analysis [9].

Such a comprehensive approach will provide an in-depth analysis of the state of use of fixed assets and will allow obtaining comprehensive analytical information for the enterprise's resource management system.

Conclusions

It was determined that the efficiency of fixed assets is a result in the form of the obtained effect, which is correlated with the spent resources. The efficiency of the use of fixed assets plays an important role in the activity of the enterprise, while the economic potential and production capabilities increase, the technical level of production increases, there are ample opportunities for the reorientation of enterprises to the production of new products that are in high demand among consumers, the growth rates of labor productivity increase, and quality improvement products and other indicators.

The profitability of the invested capital, the cost of finished products and the financial results of the business entity depend on the efficiency and intensity of operation of fixed assets. Therefore, for the formation of analytical information on the use of fixed assets, it is advisable to apply methodological aspects of managerial, financial and strategic analysis. When applying such a complex analysis, the action of all factors, information flows, their relationship and interdependence is taken into account. This will contribute to the formation of analytical data in accordance with the requests of the management system for making management decisions regarding the effective use of fixed assets and strategic development of the enterprise.

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