

**DEPRECIATION COSTS OF FIXED ASSETS: ACCOUNTING AND MANAGEMENT ASPECT****Skornyakova Yu. B.***Zaporizhzhia National University  
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**Key words:**

fixed assets, depreciation, depreciation costs, depreciation methods of fixed assets, physical wear and tear, operational load, obsolescence.

The article performs a critical analysis of the economic essence of depreciation as a mechanism for the gradual inclusion of the value of fixed assets in current costs, which is justified by the loss of their consumer properties (usefulness) and, accordingly, value. It is determined that the complex essence of the depreciation process can be revealed by distinguishing its functions such as control and restoration (corporate), cost, valuation and tax. The contradiction between the tax function of depreciation and its other functions is revealed and investigated, the solution of which requires a fundamental delimitation of the accounting policy on depreciation of fixed assets and accrual of depreciation in the tax plane. It is proved that in the plane of financial accounting depreciation should correspond as much as possible to the process of loss of fixed assets of usefulness and, accordingly, value. The extent to which traditional depreciation methods are able to model the process of loss of fixed assets in the form of depreciation and due to operational load and other factors of physical wear is analyzed. It is proposed for fixed assets, which are primarily depreciated, the calculation of depreciation by the straight-line method, which will conditionally «average» the impact of scientific and technical process, which is extremely difficult to predict. It is substantiated that the depreciation of fixed assets, which are subject to depreciation primarily due to operational load, it is advisable to carry out the production method. Developed and substantiated a modified production method of depreciation of fixed assets, the essence of which is to establish the useful life under normal operating load and defined as the production resource of the object of the operating load under normal operating conditions for a specified period. The practical implementation of the developed proposals will significantly expand the possibilities of depreciation depending on the intensity of operating load, which in turn will improve the quality of information on depreciation costs, including in terms of individual centers and cost objects.

**ВИТРАТИ НА АМОРТИЗАЦІЮ ОСНОВНИХ ЗАСОБІВ: ОБЛІКОВО-УПРАВЛІНСЬКИЙ АСПЕКТ****Скорнякова Ю. Б.***Запорізький національний університет  
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основні засоби, амортизація, витрати на амортизацію, методи амортизації основних засобів, фізичний знос, експлуатаційне навантаження, моральний знос.

У статті виконано критичний аналіз економічної сутності амортизації як механізму поступового включення вартості основних засобів до поточних витрат, що обґрунтовується втратою їхніх споживчих властивостей (корисності) та, відповідно, вартості. Визначено, що комплексно сутність процесу амортизації може бути розкрита шляхом виокремлення таких її функцій, як контрольно-відновлювальна (корпоративна), витратна, оціночна та податкова. Виявлено та досліджено суперечність між податковою функцією амортизації та іншими її функціями, вирішення якої потребує принципового розмежування облікової політики щодо амортизації основних засобів і нарахування амортизації в податковій площині. Доведено, що в площині фінансового обліку нарахування амортизації має максимально відповідати процесу втрати основними засобами корисності та відповідно вартості. Проаналізовано, наскільки традиційні методи амортизації здатні моделювати процес втрати основними засобами корисності у формі морального зносу, а також внаслідок експлуатаційного навантаження та інших факторів фізичного зносу. Запропоновано для основних засобів, які зазнають насамперед морального зносу, нарахування амортизації прямолінійним методом, що дозволить умовно «усереднити» вплив науково-технічного процесу, передбачити який надзвичайно складно. Обґрунтовано, що амортизацію основних засобів, які зазнають зносу насамперед внаслідок експлуатаційного навантаження, доцільно здійснювати виробничим методом. Розроблено та обґрунтовано модифікований виробничий метод амортизації основних засобів, сутність якого полягає у встановленні строку корисного використання в умовах нормального експлуатаційного навантаження і визначенні як виробничого ресурсу об'єкта обсягу

експлуатаційного навантаження за умови роботи в обсягах нормальної потужності протягом встановленого строку. Практична реалізація розроблених пропозицій дозволить суттєво розширити можливості нарахування амортизації залежно від інтенсивності експлуатаційного навантаження, що своєю чергою сприятиме підвищенню якісного рівня інформації щодо витрат на амортизацію, зокрема в розрізі окремих центрів та об'єктів витрат.

### Statement of the problem

A significant part of the capital of the vast majority of modern enterprises is directed to the formation of fixed assets, the technical and technological level, intensity and efficiency of which depends on the level of productivity, production costs and ultimately the level of efficiency and competitiveness of the enterprise as a whole. Given that fixed assets are reusable fixed assets, the usefulness of which decreases as a result of use gradually, the value of fixed assets is included in current expenses in installments in the form of so-called depreciation. Thus, depreciation deductions from the value of fixed assets is a significant component of the cost of products or works (services), and the amount of accrued depreciation deductions significantly affects the financial result of the enterprise.

Despite the fact that the depreciation mechanism of fixed assets has been used in business practice for more than two hundred years, and its feasibility in general is not disputed, economics still does not have a clear answer to the question of how to allocate the initial cost of fixed assets using. The availability of various alternative methods of determining depreciation deductions in practice raises the question of choosing the method of depreciation for a particular item of property, plant and equipment. For economics, such uncertainty justifies the feasibility of further research in terms of improving the procedure for determining depreciation deductions in order to improve the quality of accounting information on the depreciation of fixed assets. Even if we accept the subjectivity of depreciation as a process of distribution of the value of fixed assets between the current costs of individual periods of use, we should recognize that the approximation of the mathematics of determining the amount of depreciation to the objective process of loss of fixed assets (consumer properties) will significantly improve the quality of accounting information on the depreciation of fixed assets. The importance of this task is justified in part by the fact that depreciation costs are a significant part of the operating costs of many enterprises, including the cost of production of certain products (works, services) and centers of responsibility. Given that cost accounting information is extremely important for management decisions, and the requirements for its quality level in modern management conditions are extremely high, the task of improving the mechanism for determining the depreciation of fixed assets is extremely important for both economics and modern business practices.

### Analysis of recent studies and publications

The issue of depreciation of fixed assets is the subject of many modern scientific studies. At the same time, it should be recognized that the vast majority of scholars focus on comparing regulations and practices of depreciation in different countries and on a fragmentary analysis of the advantages and disadvantages of different methods of depreciation. It is also extremely common to

study the fiscal function of depreciation in order to justify the aggressiveness of aggressive depreciation policy for both enterprises and at the national level, which is recognized as a tool to increase investment activity and economic growth and development.

L. V. Ivchenko and T. Yu. Berehovenko, having studied the impact of depreciation methods on the financial result of the enterprise, in fact limited to recognizing the subjectivity of depreciation and the inability to «formulate a single criterion for choosing depreciation», as well as the general conclusion that «the chosen method should accelerate the renewal of fixed assets. The amount of profit, it is best to take into account all the factors associated with the operation of fixed assets. The availability of alternatives allows the company to choose the method that would best and most fully meet the above criteria» [1, p. 145]. N. O. Samburskaya, having systematized the practice of depreciation of fixed assets in different countries, eventually proposes to «develop a more detailed classification of types of fixed assets in terms of depreciation groups, regions and sectors of the economy; limited to provide opportunities to use accelerated depreciation methods», and also justifies the feasibility of introducing at the legislative level the possibility for certain groups of fixed assets to write off a significant part of the cost of costs at the beginning of their operation [2, p. 80]. In general, the issue of complexity and subjectivity of the choice of the method of depreciation of fixed assets is often proposed to be resolved by its legislative regulation. O. O. Liubar, having studied the advantages and disadvantages of certain methods of depreciation, proposes to «develop at the legislative level Regulations on the choice of depreciation method, which would set out clear criteria on which to base the choice, and would clearly identify possible depreciation methods for the relevant group of fixed assets. Such a provision would exclude the possibility of choosing a straight-line method of depreciation and would allow the formation of complete, truthful and unbiased information about fixed assets and other non-current assets» [3, p. 127]. Proposals to regulate the mechanism of depreciation at the legislative level do not solve the problem, but only emphasize its existence and importance, because the provisions of the Regulation on the choice of depreciation method, even if such a document is not mandatory but recommendatory, must be qualitatively scientifically sound. At the same time, the question of determining the amount of depreciation of fixed assets, including as part of the costs of the enterprise, remains unclear, which justifies the relevance of further research.

### Objectives of the article

The purpose of the study is to critically analyze the existing methods of depreciation of fixed assets and the formation of proposals to improve the technology of depreciation of certain categories of fixed assets in order

to improve the quality of accounting information on depreciation of fixed assets, primarily in terms of depreciation costs cost centers and responsibility centers.

### **The main material of the research**

Carrying out a critical analysis of the practice of applying existing methods of depreciation of fixed assets, it is necessary to first examine the economic nature of depreciation as such and determine what are the tasks of such depreciation and compliance with which conditions can justify the use of a method of calculating depreciation in a given case. In our opinion, the results of such a study can be the basis for improving the method of depreciation of fixed assets.

Let's simplify the conditions of business activity and consider the situation with a business that belongs to one owner, and the amount of tax payments in no way depends on the amount of depreciation on the value of fixed assets. In this case, is there a need for depreciation of fixed assets – tangible fixed assets that were purchased for the initial amount of investment and are used in the case? If the depreciation mechanism is abandoned, the income less the reimbursement of standard current expenses will be recognized as net income (profit) from the business, which can be withdrawn from the case and directed to consumption. If all such funds will be used for consumption as net income from business, then for some time the fixed assets due to operation and under the influence of other factors will lose their usefulness, and funds to replace them will not be accumulated. Thus, it turns out that in fact, not only the funds of the actual profit, but also the funds that were originally invested in the acquisition of fixed assets were withdrawn from the business and directed to consumption. It is in order to avoid such a situation and should take into account the need to reimburse the value of fixed assets. Depreciation deductions are such reimbursement, the amount of which must be reduced by the profit received, which can be withdrawn from the case and directed to consumption.

Depreciation as the sum of recognized current expenses is fundamentally different from other current expenses in that they do not lead to the formation of negative current cash flows, do not lead to a decrease in cash. That is why, primarily in investment planning and analysis, there is such a thing as net cash flow, which is the sum of net income and depreciation for a certain period. Depreciation as part of the net cash flow is a return on investment, but is not a cash that actually produces the business in excess of the amount invested. If it is planned that the case will continue, the depreciation funds that remain in the case should be used to purchase new fixed assets or overhaul (upgrade) existing ones. Of course, the sole owner may, at his own discretion, direct part of the funds remaining after reimbursement of current expenses to the renewal of fixed assets, but even in this case it is worth having an idea of what internal (without current negative cash flow) costs are due to the gradual loss of fixed assets. funds, because such costs should be included in the cost of products (works, services), which is important information for pricing and other management decisions.

The control and restoration function of depreciation in the areas of recovery of fixed assets becomes especially important in cases where the business belongs not to one but to several (many) owners. Without a depreciation mechanism, co-owners face constant conflicts in terms of decision-making on funds that are actually generated as a result of the enterprise, but can not be distributed as dividends, but should be aimed at simple renewal of fixed assets that gradually lose consumer properties (usefulness). The depreciation mechanism regulates the situation: all co-owners agree that part of the cash flow generated by the business in the amount of depreciation is not recognized as net profit and can not be used to pay dividends, but remains in the company's turnover and should be used to finance fixed assets. At the same time, in the event of liquidation of the enterprise, these funds in the form of assets in which they will be invested, must be distributed among the co-owners, because they actually belong.

The transformation of sources of asset formation from profit to depreciation fund is carried out through costs. The economic essence of the depreciation mechanism, which is used both at the planning stage and as an accounting element, is a certain distribution of costs for the creation of fixed assets – the so-called initial cost (possibly minus the liquidation value) – between several years of use of fixed assets and appropriate inclusion of such amounts in the current expenses of the entity. The depreciation mechanism does not affect the total amount that should be included in the costs over the life of the item of property, plant and equipment, but only provides for redistribution between individual periods. At the same time, given that fixed assets are used as assets for a long period of time, such redistribution can significantly affect the accounting data on costs and financial results of individual periods.

When operating fixed assets, companies must take into account their value in the amount of operating costs only because such operation over time leads to the loss of fixed assets of their consumer properties (usefulness) and, accordingly, value. Otherwise, the transfer of value to costs is impractical. Ironically, there are such examples in economic practice. This is land that, with adequate use, does not lose its consumer properties, and its value, as a limited resource, is likely to increase over time. Thus, in accordance with paragraph 58 of IAS 16 «Property, Plant and Equipment», «land has an indefinite useful life and is therefore not depreciated» [4]. Similarly, the provisions of paragraph 22 P(s)A 7 «Fixed assets» exclude land from the list of depreciable assets [5]. Thus, depreciation is a mechanism for including the value of fixed assets in current costs, which is justified by the loss of fixed assets consumer properties (utility) and, accordingly, value.

The systematic inclusion of part of the value of fixed assets in costs due to the depreciation mechanism on the other hand leads to the accumulation of the amount of depreciation of fixed assets. As a result, the accounting reflects the gradual loss of each item of property, plant and equipment and its current value. Thus, in the balance sheet fixed assets as assets of the enterprise are reflected not at the original cost of their acquisition or creation, but at the residual value, which is the difference between the

original cost and the amount of accumulated depreciation. This residual value is included in current expenses in the event of disposal of property, plant and equipment, for example, in the case of its sale or liquidation. Thus the estimating function of the mechanism of depreciation of fixed assets is realized. It is undoubtedly worth noting that the qualitative mechanism of valuation of fixed assets as fixed assets should include not only systematic depreciation, but also revaluation of fixed assets. However, even subject to regulatory requirements and accounting policies for the revaluation of fixed assets, the depreciation mechanism does not lose its valuation function, reflecting the systematic loss of fixed assets as a result of operation.

In modern tax practice, the depreciation mechanism also acquires a special tax (fiscal) function. Modern taxation systems, including the domestic taxation system, consider corporate profits as an important object of taxation. The vast majority of domestic enterprises are payers of income tax, the object of which is taxed in accordance with paragraphs 134.1.1 of the Tax Code of Ukraine is «profit, which is determined by adjusting (increasing or decreasing) the pre-tax financial result (profit or loss) specified in the financial statements of the enterprise на, the differences that arise in accordance with the provisions of this Code» [6]. One of the planned adjustments is the adjustment related to the depreciation of non-current assets. Yes, in accordance with Art. 138 TCU pre-tax financial result increases «by the amount of accrued depreciation of fixed assets or intangible assets in accordance with national regulations (accounting standards) or international financial reporting standards» and decreases «by the amount of calculated depreciation of fixed assets or intangible assets in accordance with paragraph 138.3 of this article» [6]. Clause 138.3 of the TCU, in particular, allows the use of depreciation methods provided for by national regulations (standards) of accounting, except for the «production» method, as well as the minimum allowable useful lives of fixed assets, such as machinery, equipment and vehicles such minimum term is five years.

Thus, reducing the pre-tax profit by the amount of accrued depreciation of fixed assets, the payer reduces the pre-tax object and the corresponding amount of accrued income tax payable, which in turn increases the funds remaining at the disposal of the enterprise and can be used for development, and consumption. This is the fiscal function of depreciation of fixed assets.

Summing up the study of the economic nature of depreciation, we note that in fact it is revealed due to such depreciation functions as control-reproduction (or corporate), cost, valuation and tax, which is schematically presented in Fig. 1.

When studying the functions of depreciation of fixed assets, special attention should be paid to the fundamental conflict of interest between the tax function, on the one hand, and other functions, on the other, which in practice often leads to significant distortions in the practice of depreciation of fixed assets.

The action of the tax function of depreciation actively stimulates enterprises to the so-called aggressive

depreciation policy. For domestic income taxpayers, this means accrual of depreciation of fixed assets in the maximum possible amount, with the establishment of the minimum allowable useful life of fixed assets, which allows profitable companies to minimize the amount of income tax due. The tax effect of such a depreciation policy is significant. But a fundamental question arises: how appropriate is it in terms of implementing other depreciation functions, if in financial accounting the company accrues depreciation based on the minimum allowable use, which usually takes place to minimize differences in income tax.

Thus, the minimum allowable useful life in accordance with the TCU for machinery and equipment is five years. At the same time, in practice, it will be difficult to find a company that completely upgrades such fixed assets within five years, but rather they are actively used for a much longer time. Thus, the accrual of depreciation in financial accounting for a shorter period will have certain negative consequences.

Thus, in the plane of the cost function of depreciation, this can lead to an inadequate increase in costs for the production of certain types of products or for the operation of certain structural units. The result can be erroneous management decisions to abandon certain products and activities that would be profitable with longer depreciation periods (provided, of course, that a longer depreciation period corresponds to an objectively longer useful life). Undoubtedly, this is relevant in a competitive market, because in a competitive market, a higher individual cost does not justify a higher price – the price is dictated by the market. The question arises: is it appropriate to abandon the production of a certain type of product that is unprofitable, if a competitor with similar current costs of its production is profitable, because he depreciates production equipment for eight years (which is successfully operated for eight years), and not five years.

In the area of the estimated depreciation function, inadequate acceleration of depreciation of fixed assets will exacerbate the need for regular revaluation of fixed assets. If such a revaluation is not carried out, it will potentially create conditions for abuse by the management of the enterprise, when assets with understated book value can be sold or even formally liquidated (with further sale without the owner), and business owners will lose significant funds.

In the area of control and recovery of depreciation, questions and conflicts of owners are also possible, because on the one hand minimizing tax payments is in their economic interests, but on the other hand the maximum acceleration of depreciation of fixed assets reduces the amount of profit, which is a source of dividends. Accordingly, there is a question on the part of the owners about the feasibility of forming a depreciation fund for equipment for five years, if it is actually in operation for eight or ten years.

Resolving the analyzed conflict between the individual functions of depreciation requires, in our opinion, the delimitation of accounting policies for depreciation of fixed assets and depreciation in the tax area.

In the tax sphere, any income taxpayer whose activity is profitable should minimize tax payments, including due to aggressive depreciation policy. Accordingly, when calculating income tax liabilities, the object of taxation

should be adjusted based on the maximum allowable amounts of depreciation deductions. Such depreciation deductions should be calculated on the basis of the minimum allowable useful lives of fixed assets by

methods that mathematically increase the amount of depreciation deductions in the first years of operation (cumulative method, residual value reduction method or accelerated residual value reduction method).

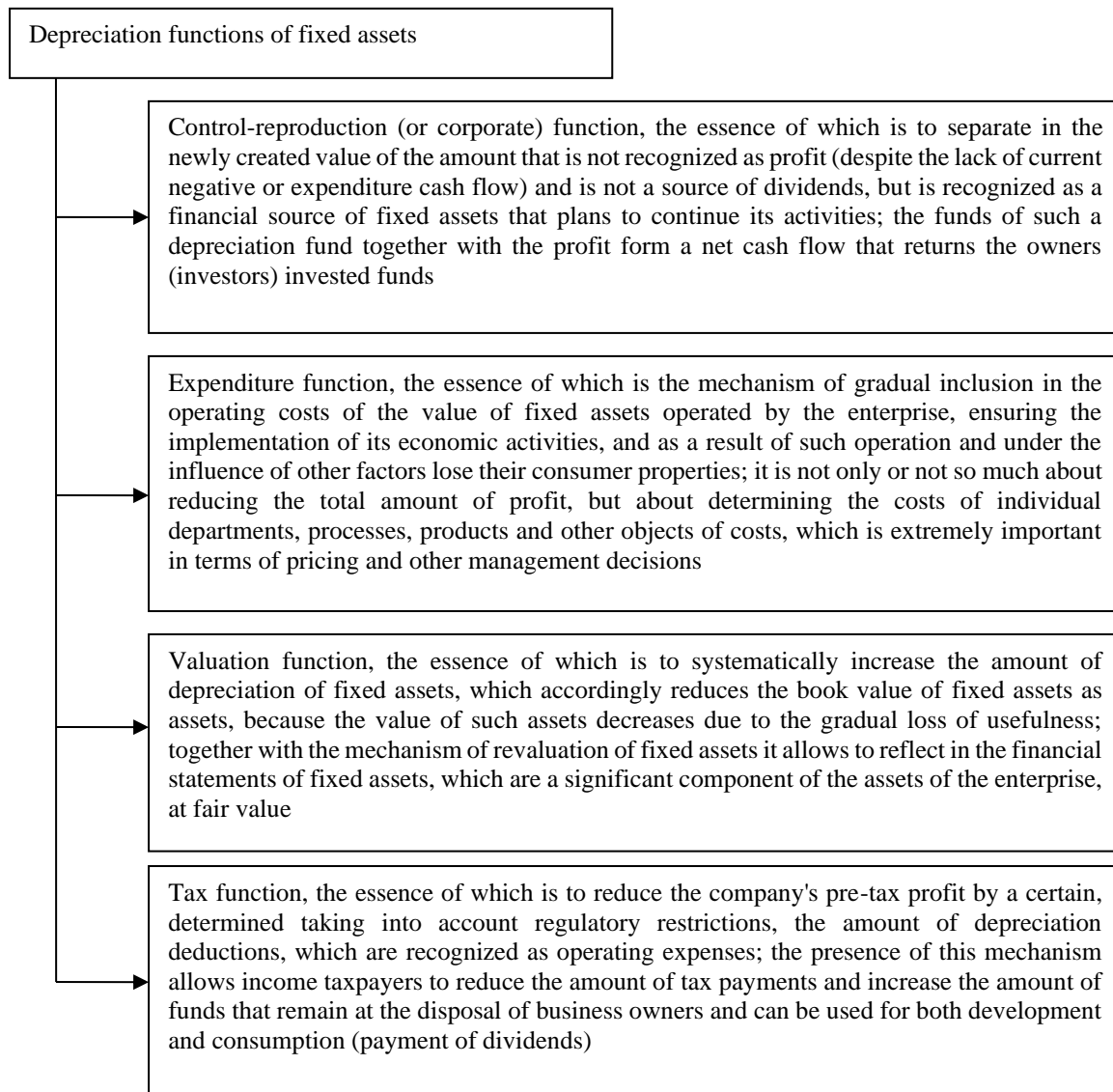


Fig. 1. Depreciation functions of fixed assets, revealing its economic nature

The accounting policy for the calculation of depreciation in the area of financial and management accounting should meet the needs of management to generate adequate information for management decisions. Here it is necessary to consider first of all adequate realization of expense function of depreciation. In accordance with the principle of accrual of income and expenses, expenses are recognized simultaneously with the decrease in assets. Fixed assets during operation gradually reduce their usefulness, which provokes the recognition of costs. That is why in the field of accounting, the mathematics of depreciation should correspond as much as possible to the gradual loss of fixed assets of its usefulness and, accordingly, value. This approach will correspond to the cost function of depreciation, allowing you to generate quality information not only about the cost of depreciation as a whole, but also such costs for individual centers and cost objects, which is extremely important for effective management decisions.

The process of losing the main means of its usefulness is quite complex, because it occurs under the influence of factors of different nature. Traditionally, the concepts of physical and moral depreciation of fixed assets are distinguished. Physical wear and tear is the result of both operating loads and environmental influences, which occurs even when the facility is not in use. Depreciation is associated with scientific and technological progress when equipment or other fixed assets become unsuitable for effective use due to the emergence of more modern and productive similar fixed assets, which may be based on a fundamentally different technology. Depreciation factors are not related to the operation of fixed assets, they are global changes that the company is not able to influence. Thus, it should be noted that the only component of depreciation or loss of fixed assets that is directly related to the operation and depends on its activity is physical wear and tear due to operating loads. It can be planned based on the data of the action plan. Physical wear and tear

under the influence of environmental factors can be pre-assessed, but it should be noted that fixed assets that are actively exploited are likely to lose their usefulness as a result of operation, rather than under the influence of environmental factors. It is extremely difficult to plan the rate of depreciation in advance, the probability of such predictions is extremely low. At the same time, despite all the complexity of the task, it is these different in nature factors of moral and physical wear and tear should in some way mathematically reflect the method of calculating the depreciation of fixed assets.

In domestic accounting practice, in accordance with the rules of P(s)A 7 «Fixed assets» for the calculation of depreciation of fixed assets can be used such depreciation methods as straight-line, residual value reduction, accelerated residual value reduction, cumulative and production [5].

The straight-line method of depreciation involves the inclusion in the cost and, accordingly, a reduction in the value of an item of property, plant and equipment by the same monthly amount over a specified useful life of the item. This accrual simulates the uniform process of loss of property, plant and equipment and value, respectively. The amount of depreciation for a given period, calculated in this way, in no way depends on the intensity of use of the object. Depreciation costs are fixed, ie their size does not depend on the volume of activity. The considered characteristics of this method call into question the expediency of its application for technological equipment, vehicles and other fixed assets, which are primarily subject to physical wear and tear as a result of operational load. Determining depreciation costs for such items on a straight-line basis means, in some way, overstating costs during periods of low operating load and reducing costs during periods of active operating load, which is incorrect from the cost accounting point of view.

The methods of residual value reduction, accelerated residual value reduction and cumulative are in fact methods of accelerated depreciation. The useful life of the object remains crucial, and the amount of depreciation does not depend in any way on the intensity of use of the object. In the scientific literature it is widely believed that these methods allow to take into account the «influence of moral depreciation» [7, p. 59] and, accordingly, «accelerated methods should be used for fixed assets that are rapidly becoming obsolete» [8, p. 260]. Mathematically, the methods of accelerated depreciation allow in the first years of operation to accrue larger amounts of depreciation deductions, which are gradually reduced. At the same time, it is difficult to substantiate the conclusion that the loss of value due to depreciation in the first years of operation occurs faster than in subsequent years. The rate of depreciation due to depreciation is almost impossible to estimate or plan in advance, but it is likely that in the first years the objects do not depreciate as quickly as in subsequent years.

An additional argument in favor of accelerated depreciation may be the fact that over time the cost of repairing certain types of fixed assets increases, and therefore to balance the costs associated with fixed assets, it is necessary to reduce depreciation in recent years by increasing such deductions in the first years operation. V. Y. Trofimchuk notes that «accelerated methods should be used for fixed assets, as the operation (aging) of which significantly increases the cost of their repair and maintenance (vehicles, computers). ... In

the last years of operation of the same facilities, when the costs of their maintenance and repair increase, the amount of accrued depreciation is small, which balances the cost of production during the term of use of such fixed assets» [8, p. 260]. At the same time, the task of depreciation of fixed assets is not to balance costs. The mathematics of depreciation should correspond as much as possible to the gradual loss of fixed assets of their usefulness and, accordingly, value, and the artificial balancing described above may lead to unreasonable management decisions on the inexpediency of replacing such significantly obsolete fixed assets with new ones means, will be in the last periods of operation a little underestimated.

In general, the popularity of accelerated depreciation methods, in our opinion, is explained by their expediency in the tax sphere, which has already been discussed above, and the factors of scientific and technological progress and depreciation of fixed assets are likely only business arguments to protect accelerated depreciation methods minimize tax payments in some way. It is doubtful that the mathematics of accelerated depreciation methods allows to adequately model the loss of fixed assets of usefulness and, accordingly, value due to depreciation. That is why in accounting for the depreciation of fixed assets, which lose their usefulness primarily due to depreciation, and the impact of the level of operating load on the process of loss of usefulness is almost absent or insignificant, we should use a straightforward method of depreciation. This will conditionally «average» the pace of scientific and technical process, which is extremely difficult to predict.

A fundamental alternative to the depreciation methods discussed above is the production method, which relates the amount of depreciation to the intensity of operation of an item of property, plant and equipment. This is the only method in which the cost of depreciation of fixed assets is a variable cost, while the use of other methods, such costs are fixed. The logic of this method is to depreciate not over a predetermined useful life, but depending on the activity of the fixed assets. The key element of this method is not the useful life, but a certain production resource of the object (according to P(s)A 7 «Fixed assets» – «total expected volume of production (works, services)»), during the practical implementation of which and depreciation is accrued. The production method of depreciation corresponds to the economic nature of the depreciation of those fixed assets that lose their usefulness primarily due to operating loads. It is talking about technological equipment, machines, devices, vehicles. Within five to ten years, such fixed assets may lose their usefulness under active load, but the technology will not change fundamentally during this period and the update will take place at almost the same technological level. That is why it is important that the mathematics of depreciation of such fixed assets reflects the loss of utility and, accordingly, value due to operating load. This, in turn, will allow us to at least approach the adequate definition of depreciation costs, including costs in terms of individual cost objects and centers of responsibility.

The practical implementation of the production method of depreciation is associated with two significant problems.

The first aspect has already been mentioned above and is that domestic tax legislation does not provide for the use of the production method of depreciation to calculate the amount by which the income taxpayer is entitled to reduce the object of taxation. Thus, in the case of application of the production method of depreciation in accounting to

determine the object of income tax, it is necessary to separately calculate the depreciation deductions by another depreciation method. At first glance, this complicates accounting somewhat, but this is what allows us to distinguish between depreciation in the tax plane and depreciation in the plane of financial and management accounting. Thus, due to the delimitation, it will be possible to optimize the tax burden in the tax plane, and in the accounting plane to bring the mathematics of depreciation to the process of loss of fixed assets and increase the quality of depreciation costs.

Another problematic aspect of the current practice of applying the production method of depreciation is the difficulty in determining the production resource, which is a key element in the calculation of depreciation. Thus, for road transport, such a production resource can be a resource in kilometers, after the development of which the car will need major repairs. For complex production equipment, such a resource can be set in units of production or volumes of processed basic raw materials. But for most fixed assets, which clearly lose their usefulness due to the operational load, it is extremely difficult to directly determine the production resource. Equipment can be auxiliary, multifunctional, can be moved from one production site or shop to another structural unit, and the purchase of additional equipment can increase the production life of existing equipment.

It is proposed to solve this problem and expand the range of fixed assets, the depreciation of which can be accrued by the production method, by modifying the production method of depreciation. The essence of this modification is a combination of elements of straight-line and production methods of depreciation. Namely, during the commissioning of fixed assets, it is proposed to set the useful life under normal operating load, and the so-called production resource to consider the amount of operating load provided to operate at normal capacity for a specified period. Thus, if the facility will be used continuously at normal capacity, the depreciable amount will be transferred to costs over a specified useful life. If the facility will be used in conditions below the level of normal power, the

depreciation period will be longer than the normative, and if, conversely – in conditions above the normal level of operational load, the depreciation period will be less than the normative. This approach allows you to calculate depreciation deductions equal to zero in cases where during the month, the object for some reason was not operated and, accordingly, did not undergo operational load.

It should also be noted that normal capacity, as an element of depreciation of fixed assets by the modified production method, does not need to be determined separately. Such an element, at least for the organization of the distribution of fixed overhead costs, must be established for each production unit of the enterprise in accordance with the requirements of P(s)A 16 «Costs». This normative document defines that normal capacity is «the expected average volume of activity that can be achieved in the normal course of business for several years or operating cycles, taking into account the planned maintenance of production» [9]. Thus, for a particular fixed asset at the time of commissioning, it is sufficient to set the useful life under normal operating load, and normal capacity will be accepted depending on which structural unit the facility was used in a given month.

Consider an example of the implementation of the proposed modified production method of depreciation on a specific example.

Thus, the initial cost of the object of auxiliary production equipment is 186976.00 UAH, the liquidation value is 10000.00 UAH, so the depreciable value is equal to 176976.00 UAH. During commissioning, it was determined that the useful life of this facility under normal operating load is 8 years. For the first five months, the facility was operated at a production site with a normal processing capacity of 20,000 kg of basic raw materials per month. The facility was then relocated and operated at another production site, the normal capacity of which is to process 15,000 liters of basic raw materials per month. The calculation of depreciation for this object by the proposed modified production method is presented in Table 1.

Table 1 – Accrual of depreciation deductions by the modified production method

Month	Real capacity per month	Percentage of development of normal power (column 2 / normal power) * 100%	Depreciation at normal capacity, UAH	Depreciation accrued at real capacity, UAH (column 4 * column 3) / 100%
1	2	3	4	5
Operation on the production site with normal capacity in the amount of processing 20,000 kg per month				
1	17500 kg	87,5	1843,50	1613,06
2	20000 kg	100,0	1843,50	1843,50
3	24000 kg	120,0	1843,50	2212,20
4	15000 kg	75,0	1843,50	1382,63
5	0 kg	0,0	1843,50	0,00
Operation at the production site with a normal capacity of 15,000 liters per month				
6	11250 l	75,0	1843,50	1382,63
7	16500 l	110,0	1843,50	2027,85

The amounts of depreciation deductions calculated in this way will correspond as much as possible to the process of loss of fixed assets due to operational load.

Depreciation costs accrued in this way are variable costs, and their value per unit of actual capacity will be a constant value. The reflection in the accounting of costs at the same

time with the loss of useful assets and, accordingly, value, as required by the principle of accrual and matching costs, will significantly improve the quality of information on depreciation costs, including individual centers and cost objects, which is extremely important for management decisions.

### Conclusions

Depreciation or accrual of depreciation is an extremely important element of enterprise management. By its economic nature, depreciation is a mechanism for the gradual inclusion of the value of fixed assets in current costs, which is justified by the loss of fixed assets consumer properties (utility) and, accordingly, value. Thus, part of the newly created value of enterprises is not recognized as profit and is not directed to consumption, but remains in the turnover of economic activity and should be aimed at updating the fixed assets of the enterprise.

In modern conditions, the essence of depreciation can be revealed in detail by distinguishing its functions such as control and recovery (corporate), cost, valuation and tax, the comprehensive implementation of which should contribute to the efficient operation of the enterprise. A thorough analysis of the peculiarities of the implementation of these functions allows to identify fundamental contradictions between the tax function of depreciation, on the one hand, and the control and restoration (corporate), cost and valuation functions, on the other. Thus, the effect of the tax depreciation function actively stimulates enterprises to the so-called aggressive depreciation policy through the use of advanced depreciation methods, which allows income taxpayers to minimize the tax burden. Qualitative implementation of other depreciation functions requires accrual of depreciation deductions so that it corresponds to the process of gradual loss of fixed assets of its usefulness and, accordingly, value, which will form qualitative information for management decisions. The solution of

this contradiction requires a fundamental distinction between the accounting policy for depreciation of fixed assets and depreciation in the tax area, which meets the norms of domestic tax legislation.

In accounting, the mathematics of depreciation should take into account the peculiarities of the process of gradual loss of fixed assets of their usefulness and, accordingly, value as a result of depreciation and under the influence of operating load and other manifestations of physical wear. For fixed assets, which are primarily affected by factors of depreciation in the practical absence or insignificant impact of wear due to operational load, it is advisable to consider a straight-line method of depreciation, which will conditionally «average» the impact of scientific and technical process, which is extremely difficult to predict. For fixed assets that are subject to depreciation primarily due to operating load, depreciation should be calculated using the production method.

In order to expand the range of fixed assets, the depreciation of which can be carried out depending on the level of operational load, a modified production method of depreciation has been developed and substantiated. The essence of this method is to establish the useful life under normal operating load and, accordingly, determined by the production resource of the fixed assets of the operating load under the condition of operation at normal capacity for a specified period. The implementation of the proposed depreciation method will bring the depreciation process closer to the process of loss of fixed assets and thus significantly improve the quality of information on depreciation costs, including in terms of individual centers of responsibility and cost objects.

### References

1. Ivchenko, L.V., & Berehovenko, T.Yu. (2015). Vplyv metodiv narakhuvannia amortyzatsii na finansovyj rezul'tat pidprijemstva [The impact of methods of depreciation on the finance result of the enterprise]. *Naukovyj visnyk Khersons'koho derzhavnoho universytetu. Serii Ekonomichni nauky – Scientific Bulletin of Kherson State University. Series Economic Sciences*, 15(1), 141-145 [in Ukrainian].
2. Samburskaya, N.O. (2015). *Oblikovo-analitychne zabezpechennia upravlinnia osnovnymy zasobamy: teoriia i praktyka (na prykladi pidprijemstv vodoprovodno-kanalizatsijnoho hospodarstva)* [Accounting and analytical support of fixed assets management: theory and practice (on the example of water supply and sewerage companies)]. Poltava: RVV PUET [in Ukrainian].
3. Liubar, O.O. (2017). Amortyzatsiia: ekonomichna sutnist', osoblyvosti narakhuvannia ta vidobrazhennia v bukhhalters'komu obliku [Amortization: economic essence, peculiarities of charging and accounting]. *EKONOMIKA. FINANSY. MENEDZHMENT: aktual'ni pytannia nauky i praktyky – ECONOMY. FINANCES. MANAGEMENT: current issues of science and practice*, 4, 117-131 [in Ukrainian].
4. Mizhnarodnyj standart bukhhalters'koho obliku 16 «Osnovni zasoby» [International Accounting Standard 16 «Property, Plant and Equipment»]. (2012). Retrieved from [https://zakon.rada.gov.ua/laws/show/929\\_014](https://zakon.rada.gov.ua/laws/show/929_014) [in Ukrainian].
5. Polozhennia (standart) bukhhalters'koho obliku 7 «Osnovni zasoby» [Regulation (standard) of accounting 7 «Fixed assets»]. (2000, April 27). Retrieved from <https://zakon.rada.gov.ua/laws/show/z0288-00> [in Ukrainian].
6. Podatkovyj Kodeks Ukrainy [Tax Code of Ukraine]. (2010, December 2). Retrieved from <https://zakon.rada.gov.ua/laws/show/2755-17> [in Ukrainian].
7. Mohylova, M.M. (2015). Optymizatsiia metodiv ta norm amortyzatsii osnovnykh zasobiv sil'skoho hospodarstva [Optimization of methods and standards of depreciation of fixed assets in agriculture]. *Ekonomichnyj analiz – Economic analysis*, 3(19), 55-62 [in Ukrainian].
8. Trofimchuk, V. Y. (2012). Vykorystannia instrumentarii amortyzatsijnoi polityky v systemi finansovoho upravlinnia pidprijemstvom [The use of depreciation policy tools in the system of financial management of the enterprise]. *Visnyk Natsional'noho universytetu «Lvivs'ka politekhnika» – Bulletin of the National University «Lviv Polytechnic»*, 722, 255-261 [in Ukrainian].
9. Polozhennia (standart) bukhhalters'koho obliku 16 «Vytraty» [Regulation (standard) of accounting 16 «Costs»]. (1999, December 31). Retrieved from <https://zakon.rada.gov.ua/laws/show/z0027-00> [in Ukrainian].