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Совершенствование методики анализа основных средств предприятия

Татьяна А. Журкина [1] zhutat@yandex.ru
Татьяна В. Сабетова [1] tsabetova@mail.ru

[1] Воронежский ГАУ, ул. Мичурина, 1, г. Воронеж, 394087, Россия

Реферат. Основные средства, являясь неотъемлемым компонентом производственного потенциала любого предприятия. От их интенсивности и эффективности использования во многом зависят финансовые результаты предприятия. Анализ основных средств принято проводить с использованием комплексного и системного подхода, основываясь на обеспеченности ими, их движении, эффективности использования (в том числе и активной их части). По мнению отдельных авторов, традиционные методики анализа основных средств имеют ряд недостатков, так как не учитывают жизненного цикла предприятия, экологические аспекты функционирования основных средств, специфику работы отдельных подразделений предприятия и его филиалов. С целью совершенствования методики анализа основных средств авторами предложено использовать формализованные и неформализованные критерии анализа рисков, связанных с использованием основных средств. Разработана анкета-опросник, позволяющая определять вероятность риска экономических потерь в связи с использованием основных средств. Авторы предлагают использовать интегральный показатель с целью анализа риска использования основных средств в динамике. С целью совершенствования процедуры аудиторской проверки авторами предложено разграничение хозяйственных операций с основными средствами по их циклам в соответствии со стадией их воспроизводства. Оперативный анализ имеет важное значение для управления эффективностью использования основных средств, особенно в напряженный период. Использование анализа ритмичности работы зерновых комбайнов позволяет снизить потери при уборке, осуществлять ее в строго установленные сроки и стимулировать работников за качественное и интенсивное выполнение задания.

Ключевые слова: основные средства, фондоотдача, техническая оснащенность, структура основных средств, риски использования основных средств, ритмичность работы основных средств

Improvement of the methods for company's fixed assets analysis

Tatyana A. Zhurkina [1] zhutat@yandex.ru
Tatyana V. Sabetova [1] tsabetova@mail.ru

[1] Voronezh State Agricultural University, Michurina str. 1, Voronezh, 394087, Russia

Summary.Fixed assets are an integral component of the productive capacity of any enterprise. The financial results of the enterprise largely depend on their intensity and efficiency of use. The analysis of fixed assets is usually carried out using an integrated and systematic approach, based on their availability, their movement, efficiency of use (including their active part). In the opinion of some authors, the traditional methods of analyzing fixed assets have a number of shortcomings, since they do not take into account the life cycle of an enterprise, the ecological aspects of the operation of fixed assets, the operation specifics of the individual divisions of a company and its branches. In order to improve the methodology for analyzing fixed assets, the authors proposed to use formalized and nonformalized criteria for analyzing the risks associated with the fixed asset use. A survey questionnaire was designed to determine the likelihood of the risk of economic losses associated with the use of fixed assets. The authors propose using the integral indicator for the purpose of analyzing the risk of using fixed assets in dynamics. In order to improve the procedure for auditing, the authors proposed segregation of economic transactions with fixed assets according to their cycles in accordance with the stage of their reproduction. Operational analysis is important for managing the efficiency of the fixed asset use, especially during a critical period. Using the analysis of the regularity in grain combines performance would reduce losses during harvesting, implement the work within strictly defined time frame and remunerate the employees for high-quality and intensive performance of their tasks.

Keywords:fixed assets, return on assets, equipment capability, fixed asset structure, fixed asset use risks, fixed asset performance regularity

Introduction

Growth of the market independence of economic entities increases their responsibility in distribution of revenues and decisions ensuring their work efficiency in general and the effectiveness of the productive capacity use, in particular. Since fixed assets are part of the material and technical base, they affect the production efficiency, so analysis of their state and performance efficiency appears especially important.

Fixed assets play a huge role in the production process, as they form the production capacity of the enterprise. The problem of increasing the efficiency of their use now is particularly urgent.

Clearly realizing the role of each fixed asset element in the production process, the degree of its physical and moral deterioration, the factors of increasing its efficiency, one is able to identify the methods and ways for increasing the efficiency of the production capacity use. Under the current conditions, such issues as technical level, quality and reliability are put at the forefront, as all of them very much depend on the equipment quality and the efficiency of its use. The improvement of the technical characteristics of the means of labor and the capital/labour ratio provide the key part of the increase in the production process efficiency.

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Problem statement

The state and efficiency of the fixed asset use affects not only the product output, but also a number of other indicators (such as product quality, prime cost, and profitability). The efficiency increase of fixed asset use will allow increasing the volume of production without attracting additional capital investments.

A.D. Sheremet [16] writes that the fixed assets analysis should be approached with systemic and complex positions, defining its components such as analysis types of, its directions, and methods.

According to T.A. Molibog and Yu.I. Molibog [9], traditional methods and have a number of shortcomings. In traditional methods there is no specification of the target orientation, as well as stakeholders groups for the analytical data. In other words, it is not entirely clear for whom analytical procedures are carried out, and what the practical significance of the fixed assets analysis for the economic entity is. They also do not take into account the environmental aspects of the fixed asset operation of the company, which, under current conditions of industrial production, as well as increasing demands from governmental and public environmental organizations, is one of the urgent tasks of analyzing fixed assets. Thus, the business entity efforts to reduce the harmful effects of fixed assets upon the environment should be noted by analysts and, in general, should increase the competitive positions of the analyzed enterprise.

The analysis of a company's fixed assets, as a rule, affects the entire business, as well as individual structural elements, but at the same time it is necessary to take into account the operational specifics of the company's divisions and branches, as well as their share in generating economic benefits, which leaves an imprint on the efficiency of the fixed asset use in different operational and geographical segments of the business. When carrying out traditional fixed assets analysis, companies take little account of the stages of the life cycle which they have currently achieved. At the same time N.A. Kazakova [7] emphasizes that at various intervals of the life cycle there will be significant difference in approaches to researching the state and use of the organization's production facilities. So, in particular, at the stage of origin and active growth of a company it normally actively increases its production potential, while the return on fixed assets can be very low. The maturity stage is characterized by the maximum efficiency of using the fixed capital, which is due to the organization's achievement of the strategic goals set. At the stage of aging, management decides on the further operation of the business entity. If the organization is liquidated, then a set of measures must be taken to maintain the high cost of the fixed assets of the company. The analysis of a company's fixed assets is incomplete without the use of monetary flow indicators, which reflect the structure and direction of the cash flow of the economic entity.

The advantages of using these indicators are known, and first of all, they include the reality and objectivity of the analyzed processes and phenomena. It should be noted that one of the three types of company's accounting activities (reflected in the financial statements) is investment, which directly affects the process of forming the fixed assets of the organization. The key efficiency indicator for the fixed asset use within the traditional analysis is the return on assets. At the same time, efficiency is the ratio of the result that is generated by some resource to the amount of the resource in question.

Thus, in the case of capital productivity, it cannot be definitely stated that revenue is generated solely by the company's fixed assets. In order to obtain revenue, the full potential of the business entity is involved. In this regard, the use of the return on assets as an indicator of the efficiency of the fixed asset use is not entirely justified.

Improvement of the fixed assets analysis methods

In accordance with the set goal we have developed a number of ways to improve the methods for fixed assets analysis and proposed a number of measures to improve the efficiency of fixed assets, based on the example of Nadezhda CJSC (Closed Joint-stock Company) in Talovskiy district, Voronezh region.

Based on the calculations, it can be concluded that this is a small company in Talovskiy district, has a grain-dairy specialization, and uses its production potential inefficiently. The company's operations are profitable, the profitability of the whole company in 2016 was 27.2%, and in plant growing – 85.4%, which is higher than the average level. The financial status of Nadezhda CJSC can be described as sustainable; the company is solvent and has high level of business activity.

Our calculations have revealed the high level of the company's supply of fixed assets, and there is a steady trend of their growth. The production load per equipment unit is gradually decreasing and is now below the average level, although it still does not comply with the standard. This is primarily because of the deficit of the company's own funds and high interest rates on loans, even under preferential programs.

The analysis of technical equipment revealed that the company is provided with a variety of equipment types for agricultural work in both crop production and livestock breeding. This matches the grain-dairy specialization of Nadezhda CJSC. In the dynamics for 2014–2016, the number of

tractors increased sharply (by 2.6 times), mowing machines, milking machines and forage harvesters increased twice, and the number of baler presses increased by 50%. Consequently, this indicates that the company actively works to restore the material and technical base.

The structure of company's fixed assets under analysis corresponds to the standard and its specialization. It should be noted that the specific weight of productive livestock in the structure of fixed assets in 2016 was 13%, which is somewhat lower than in 2014 and 2015, while the share of buildings and structures has sharply increased. In the dynamics for 2014–2016, the average annual value of fixed assets increased by more than 41 million rubles which is 48% growth.

The analysis of the fixed assets transaction indicators revealed their annual growth of at least 20%, while the renewal ratio of fixed assets in 2014 was 35.5%, and in 2016 – 26.73%. In the analyzed company, the fixed assets are not much worn out, and the analysis of their depreciation rate confirms this, as it was 25% in 2016, which is slightly higher than in 2014.

All this coincides with the decrease in the return on assets from 0.027 rubles in 2014 to 0,020 in 2016, although the financial performance in the dynamics for 2014–2016 had a growth trend and in 2016 it was 20.1%. Based on our factor analysis of capital productivity, we can conclude that in the dynamics over the past 3 years, it has declined due to the decline in the gross output value and the increase in the value of fixed assets. Factor analysis of capital intensity has revealed its growth for 2014–2016, which is associated with sharp increase in the capital-labour ratio and certain decrease in the annual labour productivity. The growth of financial profitability is largely due to the growth in profits from the product sales.

Analyzing the active part of fixed assets, we found an increase in the use efficiency of the vehicle and tractor fleet. The reasons for this growth of annual output include the increase in the number of tractors and the increase in tractor-days per tractor per year. It should be noted that a slight decrease in the output of the tractor fleet is associated with decrease in shift production compared to the previous year, while the reserve of production growth was 676 conventional standard hectares.

Combine harvesters in Nadezhda CJSC are used efficiently, while the average harvest area per combine harvester in the dynamics for the last 3 years has decreased, as well as shift factor. The main types of agricultural machinery are provided with qualified personnel. In the dynamics for 2014–2016, their growth is observed, although there is certain decrease in the milking machine operators, which corresponds to the staffing schedule. In general, over the last three years, the growth of the employee numbers busy in the main production was 6%.

In order to improve the fixed asset use efficiency we recommend the following:

(i) minimize the losses caused by whole-day and part-shift downtimes;

(II) optimize the use of all present fixed assets in time and capacity;

(III) improve the labour discipline and provision the fixed assets with raw materials for their unfailing operation;

(IV) increase the specific share of the active part of the fixed assets according to the demand of the scientific progress.

The fixed assets are an integral component of the production process. Their use in the production process is associated with various risks, that is, with the occurrence probability of the events that are undesirable or even negative. This is primarily due to the fact that fixed assets are part of the productive potential of any economic entity and fully affect its operation. For example, failures, malfunctions, and downtime in the operation of production equipment increase the likelihood of reduction in the product output produced and its quality. The unscheduled repair of production fixed assets reduces the regularity of the production process, leads to downtime and, accordingly, to economic losses. In high-tech and knowledge-intensive industries, where the level of automation and computerization is high, accounting, analysis, and management of the risks associated with the fixed asset use becomes particularly important.

The technical risk of using fixed assets is associated with a certain probability of economic losses that occur as a result of various failures and breakdowns of the process equipment. Its connection with the fixed asset use is direct, since periodic equipment breakdowns are an integral inevitable component of the production process.

Production risk is associated with the probability of economic losses in the production activities of the organization. This type of risk is inversely related to the quality characteristics of the products. It is noticed, that with growth of labour productivity the industrial risk decreases. The magnitude of this risk is significantly affected by the degree of deterioration and the efficiency of the fixed asset use, because obsolete and worn-out process equipment, other things being equal, will increase the cost and labour intensity of economic processes, which certainly increases the production risk.

Commercial risk is the probability of losses occurring as a result of the sale of products, goods, works, and services. It should be noted that the impact of fixed assets on commercial risk is insignificant and indirect. It is more often associated with vehicles that carry out shipment, transportation and transfer of finished products to customers.

Innovative risk is the likelihood of economic losses arising from investing additional funds in the production of new types of goods and services. And the main component of innovation is the use of high-performance and low-cost equipment. Thus, it becomes clear that this risk may consist in the probability of buying fixed assets that do not fully meet the requirements of innovative technologies.

The use of fixed assets in any manufacturing enterprise is associated with industrial and property risks, as well as with sectoral and environmental risks. Reduction of industrial risks is associated with increased reliability of process equipment, which is directly related to the implementation of preventive measures, the main purpose of which is to prevent emergencies.

In order to minimize environmental risks, continuous monitoring of hazardous emissions to the environment is carried out in order to minimize their impact. Sectoral risks are caused by the situation changes in the key raw materials and finished goods markets. This is due to two positions. First, the procurement of raw materials is related to their delivery, which is carried out using different types of fixed assets, and thus can constitute a risk factor for timely and full-scale deliveries. Secondly, the erratic and ill-conceived distribution of fixed assets among production units and warehouses can significantly reduce their loading rates and, as a consequence, the economic benefits from their use.

Entrepreneurial risks arise under the influence of numerous factors, they can be the result of the company's activity or can follow from its production strategy. Those risks can be the consequence of the company's internal affairs, or the result of the impact of the business environment, or of the actions of counterparties and competitors.

Conventionally, the risk factors for the formation and use of fixed assets can be divided into 2 groups: external and internal ones. The first group includes market conditions, means of production, state policy in the area of taxation and environmental legislation, scientific and technological progress. The second group includes the level of personnel qualification, the reconstruction and modernization of production, the change in production technologies, the change of activities, and diversification of production.

An important methodological issue of risk analysis is the methods of their evaluation. It should be noted that the most objective method is the use of formalized and non-formalized criteria. And the latter are used in case of lack of numerical information, as well as together with formalized criteria, and consist in the analytical processing of answers to a number of questions as follows:

(i) Are there unplanned shutdowns of the production process due to technical reasons?

(II) Are there unplanned shutdowns of the production process caused by inadequate staff qualifications and their inability to operate the new state-of-the-art equipment?

(III) Are routine maintenance and inspection performed on a regular basis?

(IV) How often are the production assets renewed?

(v) How big a part of the used fixed assets meets current requirements for environmental safety?

(VI) Does the structure of the fixed assets meet the specialization of the company?

(VII) Does the actual performance of fixed assets correspond to the planned indicators?

In case where most questions get negative answers, the researcher has every reason to assume that there is high probability of risk of economic losses associated with the fixed asset use. And, on the contrary, in case where most answers are positively answered, the organization is not threatened with such risks.

The main risks of using fixed assets are technical risk, financial and economic, and environmental risk. For analyzing these types of risk, one should use the indicators describing the use of fixed assets by such parameters as energy efficiency, return on capital, and coefficient of environmental efficiency. Energy efficiency is defined as the ratio of the output value for the period to the cost of energy resources consumed. Capital productivity is equal to the ratio of gross output to the average annual value of fixed assets. The coefficient of environmental efficiency is defined as the ratio of the rate of growth of hazardous emissions into the environment to the growth rate of expenses for the environmental activities of the company.

The minimum risk will be attributed to the situations where the actual value of each of these indices will correspond to its planned value. Any deviation, both large and small, can be considered as a risk factor. In this regard, we can consider the three risk factors associated with the use of fixed assets. They are coefficient of technological, financial-economic, and environmental risks, which are calculated as the percentage of the plan implementation for the relevant indicators.

The analysis of the total risk can be done using the integrated risk indicator (1).

$$R=\sqrt{\left(1-Rt\right)^2+\left(1-Rf\right)^2+\left(1-Renv\right)^2} \quad (1)$$

There will be no risk with zero value of the integral indicator, that is when all actual efficiency values are equal to the planned ones (but this is an impossible situation). The greater the deviations of indicators are, the higher the risk of using fixed assets is. It should be noted that the planned information in most cases is commercial classified information, thus complicating the calculation of the proposed indicators to external users.

The feed data for calculating the risk of formation and use of fixed assets in Nadezhda CJSC in the Talovskiy district is presented in Table 1.

Next, we calculate the coefficients of technological, financial and economic, and environmental risks, as well as an integral indicator of the risk of using fixed assets (see Table 2).

Table 1.

Feed data for calculating the risks of fixed asset use

Indicators	2014		2015		2016	
	plan	actual	plan	actual	plan	actual
Energy efficiency	18.95	19.44	15.07	14.71	15.2	13.92
Return on assets	0.023	0.027	0.030	0.024	0.024	0.019
Environmental efficiency coefficient	1.55	1.62	1.7	1.85	1.5	1.17

Table 2.

Indicators for the risks of fixed asset use

Indicators	Years		
	2014	2015	2016
Rt	1.02	0.97	0.91
Rf	1.17	0.80	0.79
Rec	1.04	1.09	0.78
R	0.17	0.22	0.31

Analysis of Table 2 indicates risk increase associated with the use of fixed assets in the dynamics of the last 3 years, which is explained by the increasing deviations of key indicators from the planned values. This circumstance requires the most balanced approach to the development of tactical and strategic plans and forecasts. The increase in deviations in this case indicates the existing shortcomings in the work, which can be associated with the occurrence of risk situations.

Reducing the likelihood of negative situations is possible on the basis of the following activities: commissioning of uninstalled equipment; adjustment and repair of existing equipment; its replacement and modernization; reduction of intraday and intra-shift downtime, increase in the shift ratio; more intensive time use; implementation of technical progress measures.

An important issue at the moment is reproduction of fixed assets which is a continuous process of their development through reconstruction, technical re-equipment, modernization and major repairs, as well as the acquisition of new means to provide companies with all necessary units of required quantity and quality.

Reliable information on the reproduction and use of fixed assets allows managers to make timely decisions. As for external users, it makes possible drawing the right conclusions about the financial state of a company. The accuracy of accounting information in the financial statements can be confirmed on the basis of the audit of fixed assets transactions at each stage of their reproduction [16-20].

When organizing audit of operations associated with fixed asset reproduction, it is necessary to identify the reproduction stages and accounting objects at each reproduction stage (Figure 1).

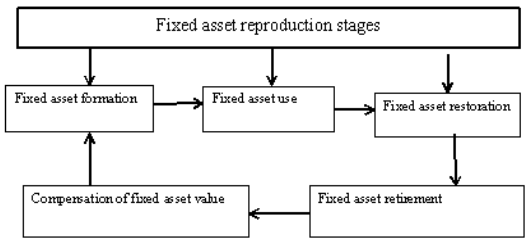

Figure 1. Fixed asset reproduction stages

Stages of fixed asset reproduction are formation of fixed assets, use and recovery, retirement, and reimbursement (compensation) of their value.

The audit should begin with assessment of the internal control system for fixed asset transactions. The results of this evaluation can be presented in form of a questionnaire or question list.

The next stage of audit is preparation and documenting of the audit program. The leading researchers in the area of audit, such as T.I. Logvinova [8], V.V. Podolskiy, A.A. Savina [13], N.N. Hahonova, I.N. Bogataya [15], suggest the following approaches to the development of the audit programme – accounting, auditing, and sectoral.

The legal approach includes design of a programme for fixed asset testing from the legal point of view, and involves a comprehensive study of the legal aspects of the economic activities of the company.

Under the sectoral approach, the audit plan and programme are compiled and adapted, depending on the economic sector of the company being audited.

In addition, some scientists (A.A. Larina, R.N. Sungatullina, E.A. Klinova, Yu.V. Panasyuk, G.V. Denisenko, N.V. Parushina, E.A. Kyshtymova) identify object-based and cyclic approaches to designing the programme of fixed asset audit. The essence of this approach is that the audit sections

defined during the inspection coincide with the objects of accounting. In other words, specific accounts and business transactions are thoroughly analyzed by the accounting objects at each reproduction stage. The elements of the audit programme in this case can be represented as in Table 3.

Table 3.

The elements of the audit programme for object-based approach to fixed asset audit

Structural elements of the audit programme for the section 'Fixed asset audit'	Inspected accounts
Audit of accounting for fixed asset transactions	Account 01 Fixed assets
Audit of accounting for fixed asset depreciation	Account 02 Fixed asset depreciation
Audit of fixed asset leasing transactions	Account 03 Income yielding investments into tangible assets Account 76.8 Settlement of leasing obligations
Audit of fixed asset repair works	Account 23 Auxiliary production
Audit of formation and use of the reserve for fixed asset repairs	Account 96 Provisions for future expenses
Audit of fixed asset revaluation results	Account 83.2 Increase of fixed asset value due to revaluation

In general, the object-based approach to designing the plan and audit program is simple enough to use and allows one to collect the necessary audit evidence that confirms the correctness and regularity of economic transactions with fixed assets. The main drawback of this indicator is the duplication of audit procedures, as well as repeated appeal of the audit team members to the same sources of information.

In order to improve the audit procedure, in our opinion, it is possible to use the cyclic approach, where the cycles of interrelated economic operations are identified as the main areas of audit in accordance with their reproduction stages.

The essence and interrelation of economic operations in the cyclic approach to fixed asset audit can be presented in the form of scheme (Figure 2).

To increase the audit effectiveness and the reliability of the evidence obtained, it is necessary to detail the accounting operation cycles, that is, to single out cycles of the second and third levels. (see Table 4).

It should be noted that definition of cycles and sub-cycles of business operations should be carried out taking into account the characteristics of the audited company's activities.

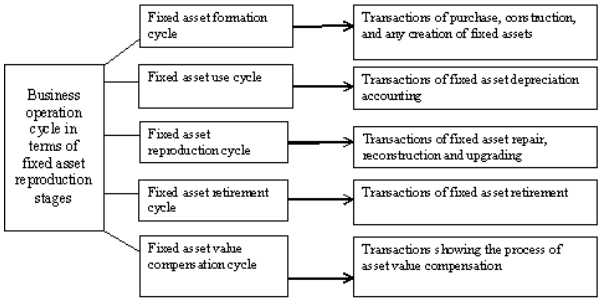

Figure 2. Business operations in terms of fixed asset reproduction stages under the cyclic approach

Table 4.

Sub-cycles of business operations under fixed asset audit

The first level cycle	The second level cycle	The third level cycle
1. Fixed asset formation cycle	Fixed asset purchase. Fixed asset creation	Fixed asset types. Production types. Divisions. People in charge.
2. Fixed asset use cycle	Depreciation charges. Costs of maintenance and exploitation	Fixed asset types. Production types. Divisions. People in charge.
3. Fixed asset restoration cycle	Restoration types (repair, reconstruction, upgrading, etc.). Cost of asset restoration.	Fixed asset types. Production types. Divisions. People in charge.
4. Fixed asset retirement cycle	Sale. Retirement due to wear. Leasing out. Granting, donation. Exchange.	Fixed asset types. Production types. Divisions. Retirement directions.
5. Fixed asset value compensation cycle	Proceeds from sales. Sources for financing the reproduction (profit, depreciation charges, insurance compensations, etc.)	Fixed asset types. Production types. Divisions. Retirement directions.

For example, an agricultural company should provide for the verification of the formation of the biological asset value (perennial plantations, productive and pedigree livestock), accounting for leasing operations.

When checking the cycle of operations for the fixed asset formation, one should determine the source and correctness of recording the original value of the fixed assets in accounting. In this case, the registers of synthetic and analytical accounting for account 01 'Fixed assets' and account 08 'Investments in non-current assets' are compared, fixed asset commissioning acts (form OS-1) are analyzed, along with inventory cards for fixed asset objects (form OS-6), the General Ledger on accounts 01 and 08. In his conclusions, the auditor is guided by the provisions presented in Accounting Policy Regulations 6/01 'Accounting for fixed assets'.

The auditor necessarily checks the correctness of the definition of the inventory object and its attribution to fixed assets. It is specified if the objects with a service life of less than 12 months, as well as objects not intended for production, are included in the fixed asset structure. The correctness of the fixed asset inventory is studied, including (i) compliance with the timing of the inventory of fixed assets, (II) the procedure for issuing inventories, (III) minutes of meetings of inventory commissions,(IV) the order of the head of the organization concerning the results of inventorying, (v) approval of inventory results in accounting.

Particular attention should be paid to the verification of fixed assets for which special depreciation conditions apply. These are fixed assets that are on long-term reconstruction, modernization, conservation, as well as fixed assets, by which the acceleration factor is applied when calculating the amount of depreciation. In order to increase the audit effectiveness, it is necessary to compile a list of these types of fixed assets and, on the basis of a random check, make an arithmetic recalculation of the amounts of depreciation charges. The audit is carried out according to the following registers: inventory cards of fixed assets accounting (OS-6); list of depreciation charges for fixed assets, General ledger for accounts 01, 02, 20, 23, 25, 26, ledger No 10-APK.

A lot of mistakes are made in calculating depreciation charges for upgraded fixed assets, that is, the cost of the upgraded facility is improperly determined, the economic life after reconstruction is not revised, depreciation is not calculated for fully depreciated items, and for restored fixed assets. We have designed and proposed the use of the working document form for checking the correctness of calculation and recording depreciation charges for fixed assets.

Analysis of the studied data shows that during the audit an unjustified overstatement of the amount of depreciation charges for some units led to an increase in the expenditures during the reporting period by 1,434.3 ths rubles. In this case, the accountant should make correction entries for writing off (reversing) the wrongly charged amount of depreciation.

The final production and financial indicators largely depend on how the company uses its production potential, including land, fixed and circulating assets, and labour. The use of the production potential components is usually monitored through the results of calculations of the production per 1 hectare of farmland, return on assets, and annual productivity of labour. However, analysis with annual periodicity is extremely inadequate, since it does not reveal the conditions for the formation of these indicators and the reasons for deviating from the specified parameters. In a sense, this analysis is 'frozen', since it only records and analyzes the current situation. At the same time, the question arises as to how to avoid this. After all, most types of agricultural products are received once a year. The way out of such situation is in current (operative) analysis, which is the analysis of particular direct and indirect indicators more frequent than once a year.

These are the indicators (i) shift and daily production, shift coefficient for machine and tractor fleet use; (II) the mileage utilization factor, the utilization rate of machines in operation, payload for vehicle fleet, (III) hourly and shift labour productivity for labour resources. For this purpose, a five-day or ten-day analysis of the tractor and car fleet is carried out. The initial data for this analysis are tractor driver lists, road lists, fuel consumption reports, production reports on specially developed forms concerning the costs of operating the machine and tractor fleet.

Based on the operational management analysis, it is possible to track fuel consumption and current costs for repairs and labour. Management influence can achieve measures to eliminate the causes of cost overruns for these items. Fuel overages occur due to improper assembly of machinery, downtime with a running engine, irrational transfer of equipment or as a consequence of the unregulated fuel system of tractors and cars.

In the field of view of the analyst during the management analysis should be the use of working time within a month. The solution to this problem is to take into account the loss of working time for technical malfunctions, absenteeism and illnesses of tractor operators. These articles constitute an unused reserve of working time. Multiplying its value by the shift productivity of a standard tractor, one can determine the reserve for increase in the tractor work volume.

In those companies where the accounting and analytical work is well established, a monitoring system for each tractor is applied separately. For this purpose, each tractor, by the tractor driver's name and inventory number, carries out primary accounting of the work performance (with a mark of quality), fuel consumption, wages, and other costs. Such analysis is carried out during the spring-summer-autumn field works and covers the period of the most active work of the machine-tractor park (in the Central Black-Soil Area it is approximately from April 1 to November 1).

As we see, for the evaluation of tractors intensive load indicators are used, like output to the tractor, and indicators of extensive load, including the use of tractors throughout the period. We include the output to the standard tractor (annual, daily, hourly) into the first group of indicators. The second group includes shift coefficient, the number of days worked per tractor per year.

The use of combines is characterized by the same system of indicators as tractors, but the order of calculation of some indicators has its own specifics. So, the account of the production of harvesters is not in conventional reference hectares, but in physical hectares. To assess the efficiency of the combine harvester, an additional measure of grain yield is used. It is determined not by the average annual, but by the average seasonal number of combines, which is associated with a relatively short period of their use in the production process.

The current analysis of vehicle fleet costs is carried out on the following items: wages, fuel, maintenance and maintenance, other costs. Such calculation is conducted on monthly basis and allows one to calculate the cost of goods through direct costs. To reduce the vehicle expenses, it is very important to monitor the consumption of fuels and lubricants, which forms a great share in the cost structure. Therefore, the normative and actual fuel consumption is compared and savings or overruns are determined. At the same time, the total fuel consumption according to the norm is corrected for the actual volume of work performed.

Great importance for fixed asset operational analysis is attributed to analysis of the regularity of their use, especially under the state of machinery shortage, since, for instance, the rhythm of harvesting, plowing, or product transportation of products directly depends on it. Regularity is the uniform product output in accordance with the schedule in terms of volume and range provided by the plan. Irregular production process ruins the main company's indicators, for example, the quality of the finished works and products is reduced, the amount of work in progress and the excess of finished goods left in warehouses are increasing, and, consequently, the capital turnover is slowing down. All this leads to increase in the cost per unit of finished goods, a reduction in the amount of profit, and deterioration of the financial condition of the company.

The main indicator for determination of the production regularity is regularity coefficient, which is equal to the specific weight of the products delivered on time (without breaking the schedule) to all finished products. We believe that regularity coefficient can be used based on the volume of work by the corresponding unit or unit of equipment. Then it can be defined as the specific weight of the volume of work performed in time to the planned total volume of work. And the term for determining regularity can be reduced from 5–7 days to 1–3 days in a busy period (the sowing and harvesting period). Such calculations are shown in the Table 5.

Table 5.

Regularity coefficient calculations for the harvesting combine operation

Indicators	John Deere 9680	Acros 585	Claas Dominator 130
Harvesting acreage for 3 days, ha	255	255	255
Harvesting plan for the 1st day, ha	85	85	85
Actual harvesting during the 1st day, ha	60	75	80
Plan offset in terms of regularity, %	23.5	29.4	31.4
Harvesting plan for the 2nd day, ha	85	85	85
Actual harvesting during the 2nd day, ha	95	95	85
Plan offset in terms of regularity, %	33.3	33.3	33.3
Harvesting plan for the 3rd day, ha	85	85	85
Actual harvesting during the 3rd day, ha	100	85	90
Plan offset in terms of regularity, %	33.3	33.3	33.3
Regularity coefficient for 3 operational days, %	90.1	96.0	98.0
Rating	3	2	1

According to these calculations, it is evident that on the first day all harvesters did the acreage less than planned, with a set-off for regularity of less than 33%, while during the 2nd and 3rd days the plan was overfulfilled, but 33.3% went into the set-off regularity. After the three days of harvesting, the regularity coefficient for the three combines is different. Based on the ranking, the first place was given to the Claas Dominator 130, as the regularity coefficient of its operation was 98%, which is slightly higher than that of other combine harvesters.

In order to optimize the harvesting process and increase the regularity coefficient, it is recommended to consider the possibility of moral or material (bonus) stimulation of the combine operator working with the Claas Dominator 130 harvester and to discuss these results with other combine operators in order to optimize their performance, to identify and eliminate the reasons for the failure of the harvesting plan of first day.

The lack of regular production can be associated with a number of reasons that can be conditionally divided into two groups: external and internal. Internal causes of irregularity include unstable financial condition of the company, poor

organization, planning, and control, low level of applied technology. External reasons of irregularity include untimely delivery of raw materials and, consequently, incomplete use of production capacities, lack of energy resources not caused by the company's activities, which, for example, may be associated with an increase in prices for components and raw materials, or with interruptions in power supply.

Revealing the causes and their classification allows determination of the measures to increase the regularity and eliminate its negative impact. The lost opportunities of the company attributed to the irregular nature of its activity are most often determined by the difference between the actual and planned (possible) output, and in order to obtain more accurate results, it is recommended that the analysis be carried out at shorter intervals.

Conclusion

Thus, in order to increase the efficiency of the fixed asset use in CJSC Nadezhda of Talovskiy District, we recommend carrying out the operational analysis of agricultural machinery with the use of regularity indicators in addition to analyzing the process equipment, reproduction, movement and efficiency of its use.

This will allow us to identify specific equipment, the work of which is intensive, to reward the driver (the combine operator) for excellent performance, to outline and implement a system of measures to increase the efficiency and intensity of the available equipment. We believe that in order to minimize the risks associated with the fixed asset use, it is necessary to determine the integral indicator several times a year based on certain risk types, which will allow undertaking prompt measures to reduce it.

The company management urgently needs to optimize the use of all types of fixed assets available, including time and capacity, reduce the intraday and intra-shift idle periods and associated losses, improve labour discipline among employees, provide the opportunity to optimize the production structure of fixed assets in accordance with the product specialization.

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СВЕДЕНИЯ ОБ АВТОРАХ

Татьяна А. Журкина к.э.н., доцент, кафедра экономического анализа, статистики и прикладной математики, Воронежский ГАУ, ул. Мичурина, 1, г. Воронеж, 394087, Россия,zhutat@yandex.ru

Татьяна В. Сабетова к.э.н., доцент, кафедра управления и маркетинга в АПК, Воронежский ГАУ, ул. Мичурина, 1, г. Воронеж, 394087, Россия,tsabetova@mail.ru

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INFORMATION ABOUT AUTHORS

Tatyana A. Zhurkina Cand. Sci. (Econ.), associate professor, economic analysis, statistics and applied mathematics department, Voronezh State Agricultural University, Michurina str. 1, Voronezh, 394087, Russia,zhutat@yandex.ru

Tatyana V. Sabetova Cand. Sci. (Econ.), associate professor, management and marketing in agro-industrial complex department, Voronezh State Agricultural University, Michurina str. 1, Voronezh, 394087, Russia,tsabetova@mail.ru

CONTRIBUTION

Tatyana A. Zhurkina integrated the information, drew results and is responsible for plagiarism

Tatyana V. Sabetova organized the information, wrote the manuscript

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