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MODELING OF THE PROCESS OF ANALYSIS OF FIXED ASSETS OF THE ENTERPRISE

The purpose of the article is to study the modeling in the analysis process of fixed assets at the enterprise in the context of globalization.

The methodology consists in the use of the following methods: method of observation, methods of analysis and synthesis, classification, monographic method, induction and deduction, grouping, comparison, generalization method.

The scientific novelty of the work is to improve modeling in the analysis of fixed assets, which will increase the efficiency of analytical procedures for fixed assets and, consequently, increase the efficiency of accounting and internal control in the enterprise.

Conclusions. Modeling the process of analysis of fixed assets and the efficiency of their use in the enterprise will not only influence the organization of the process of analysis of fixed assets, improve the quality of analytical procedures for fixed assets, but also optimize structural logical parts of the analysis of fixed assets due to modern aspects of modeling decision support and innovative technologies.

Key words: modeling, model, analysis, fixed assets, assets, accounting.

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Моделювання процесу аналізу основних засобів підприємства

Мета статті полягає в дослідженні моделювання в процесі аналізу основних засобів на підприємстві в умовах глобалізації.

Методологія полягає у використанні таких методів: спостереження, аналізу та синтезу, класифікації, монографічного, індукції і дедукції, групування, порівняння, узагальнення.

Наукова новизна роботи полягає в удосконаленні моделювання в процесі аналізу основних засобів задля застосування цих аналітичних процедур з метою підвищення ефективності системи бухгалтерського обліку та внутрішнього контролю на підприємстві.

Висновки. Використання моделей при аналізі основних засобів на підприємстві зумовлено складністю процесу прийняття рішень: фактична кількість змінних, які визначають певну проблемну ситуацію, значно переважає можливості людини їх осягнути, тому необхідно спростити ситуацію за допомогою моделювання – і це дасть змогу її адекватно оцінити та розробити правильний підхід до вирішення проблеми. Моделювання в аналізі основних засобів підприємства – це дослідження процесу аналізу, його складників шляхом побудови і вивчення їх моделей для того, щоб визначити варіанти майбутніх подій та оцінити потенційні наслідки прийняття альтернативних рішень в аналізі основних засобів підприємства. Моделювання аналізу основних засобів підприємства можна застосовувати для вивчення об'єкта аналізу, а також дослідження та вдосконалення самого процесу аналізу основних засобів. Використання моделей дає змогу аналітикові більше систематизувати процес прийняття рішень в аналізі основних засобів підприємства й оптимізувати саму модель. Моделювання процесу аналізу основних засобів та ефективності їх використання на підприємстві дасть можливість не тільки вплинути на організацію процесу аналізу основних засобів, підвищити якість проведення аналітичних процедур щодо основних засобів, але й оптимізувати структурно-логічні частини методики аналізу основних засобів підприємства внаслідок застосування сучасних аспектів моделювання, систем підтримки прийняття рішень та інноваційних технологій.

Ключові слова: моделювання, модель, аналіз, основні засоби, активи, бухгалтерський облік.

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Моделирование процесса анализа основных средств предприятия

Цель статьи состоит в исследовании моделирования в процессе анализа основных средств на предприятии в условиях глобализации.

Методология заключается в использовании следующих методов: наблюдения, анализа и синтеза, классификации, монографического, индукции и дедукции, группировки, сравнения, обобщения.

Научная новизна работы заключается в усовершенствовании моделирования в процессе анализа основных средств для применения этих аналитических процедур с целью повышения эффективности системы бухгалтерского учета и внутреннего контроля на предприятии.

Выводы. Моделирование процесса анализа основных средств и эффективности их использования на предприятии позволит не только повлиять на организацию процесса анализа основных средств, повысить качество проведения аналитических процедур по основным средствам, но и оптимизировать структурно-логические части методики анализа основных средств предприятия вследствие применения современных аспектов моделирования систем поддержки принятия решений и инновационных технологий.

Ключевые слова: моделирование, модель, анализ, основные средства, активы, бухгалтерский учет.

Relevance of the research topic. When modeling the process of analyzing the fixed assets of the enterprise, analysts often encounter situations where the identification of causation between events is no longer enough to effectively solve problems. Therefore, in order to form sound conclusions and make objective and rational decisions based on them in such cases, modeling is used in the analysis of fixed assets of the enterprise. It should be noted that the model is simpler than the real problematic situation, because special attention in building a model in the analysis of fixed assets of the enterprise is paid to relevant factors, as well as those indirect factors that have a significant impact on the situation. And irrelevant factors are often not considered, which allows the analyst to better outline and understand the existing problems in the enterprise, to form an effective strategy to overcome them and make the best decision. Also, modeling the analysis of fixed assets of the enterprise helps the analyst to apply their own experience and mental abilities, combine them with the experience and judgments of other analysts or highly specialized experts involved in solving the problematic situation being simulated.

The purpose of the article is to study the modeling in the analysis process of fixed assets at the enterprise in the context of globalization.

Presentation of the main material. The use of models in the analysis of fixed assets of the enterprise is due to the complexity of the problematic situation. Therefore, the decision-making process in the analysis is complicated, because often the actual number of variables that define a problem far exceeds human capabilities and to understand this process it is necessary to simplify the situation through modeling, which will adequately assess the situation and develop the right approach, solution.

Modeling of the analysis of fixed assets of the enterprise can be used in the following areas: to study and improve the process of analysis; to study the object of analysis – the methodological aspect. To study the essence of modeling in the analysis of fixed assets, it is important to characterize the concepts of «model» and «modeling». Model – algorithmic scheme of control procedure; scheme to explain a phenomenon or process, a sample copy of something [1, p. 60]. The concept of «model» in this definition is considered too general.

The model has a target character, that is it does not reflect the original itself, but is formed based on the goal of displaying very specific properties of the modeling object [2, p. 59].

A model is an informational image of a real object that represents a given object (system) with a certain degree of accuracy and in a form different from the shape of the object (system) itself. This definition is not entirely logical, because the information image of a real object can be any data that directly or indirectly relates to it, but not all data can form a model of this object.

The model is a conditional image of the object of management (research), which is constructed by the subject of management (research) in such a way as to reflect the characteristics of the object – properties, relationships, structural and functional parameters relevant to the purpose of management (research) [1, p. 60]. In order to effectively consider the place and role of models in the process of analyzing the fixed assets of the enterprise, we need to define the concept of «modeling».

Modeling is the creation of an image from the original, called a model, which under certain conditions can replace the original object, reproducing the properties of interest to the researcher and the characteristics of the original, while providing clarity, visibility, testing, ease of operation and other benefits [2, p. 58].

Modeling – a method of studying phenomena and processes. In economics, the analysis of social phenomena modeling is the reproduction of certain characteristics in experimental forms and conditions. In addition, mathematical modeling is used as a reflection of economic and social processes through mathematical dependencies with the involvement of statistical data, sociological and other information.

Modeling is the process of creating a model and operating it, in order to obtain the necessary data about the real object.

Modeling is the only way to present options for the future and to determine the potential consequences of alternative solutions, which allows you to evaluate them objectively.

The essence of the modeling method is to construct a model based on preliminary study of the object and highlight its essential characteristics, experimental or theoretical analysis of the model, comparing the results with data about the object and adjusting the model. The main purpose of modeling is to bring the theoretical possibilities of the data closer to the real ones.

Modeling in the analysis of fixed assets of the enterprise is a study of the analysis process, its components by building and studying their models in order to identify options for future events and assess the potential consequences of alternative decisions in the analysis of fixed assets [1, p. 62].

For a detailed study of models in the analysis of fixed assets of the enterprise it is necessary to consider their main characteristics. All models are divided into three basic types: physical, analog, mathematical.

A physical model is an enlarged or reduced description of an object or system under study. A physical model, unlike others, looks essentially almost the same as the object being modeled.

The analog model replaces the object under study with an analog that behaves like a real object, but does not look like it. An example of an analog model is a graph showing the interdependence between two or more variables. Another example of an analog model is an organizational chart. This model is an effective way of perceiving the relationships of structural units of the enterprise, which is especially important when analyzing the fixed assets of the enterprise.

The third basic type of models, which is essentially the most important for the analysis of fixed assets of the enterprise is a mathematical model. The mathematical model (sometimes called the symbolic model) is based on the use of symbols to describe the properties of an object or system. In the theory and practice of analysis of fixed assets of the enterprise use a huge number of different models, namely symbolic models, which are designed to identify and analyze the relationship between the performance of the entity.

Having studied the works of blighty and foreign authors, we have identified a number of classifications of models in their use in the analysis of fixed assets of the enterprise.

According to the fact that the purpose of modeling in the general case can be theoretical and practical, models are also divided into two types:

1) cognitive, which are a form of organization and presentation of knowledge, a means of connecting new knowledge with existing ones. Therefore, when identifying differences between the model and reality, the task is to eliminate this discrepancy by changing the model.

2) pragmatic, which is a form of management, organization of practical actions, a way of presenting exemplary actions, that is standards or their results. In fact, they are a working representation of goals. They seem to play the role of a standard or model under which both the activity itself and its outcome are built. Examples of pragmatic models are action plans and programs, statutes of organizations and codes of laws, regulations, technological schemes of various organizational operations, algorithms, working drawings and templates, selection parameters and technological tolerances [2, p. 59].

The analysis also distinguishes between inductive and deductive models.

Inductive models are formed by generalizing observations of individual facts that are considered important for decision-making in the analysis of fixed assets of the enterprise. When building a high-quality inductive model, it is necessary to reflect the main properties of the simulated situation.

When developing deductive models, it is necessary to start not from the analysis of specific facts, but from the state of the situation as a whole. The inductive model will be the analysis of fixed assets of the enterprise, first according to analytical and then synthetic accounting. Whereas the deductive model will first analyze the fixed assets of the enterprise according to synthetic, and only then analytical accounting.

Other classifications include the division of models into single-period and multi-period models.

The content of one-period models is the assumption that the sum of optimal individual decisions both in individual periods of their adoption and in general for the whole period, also gives the optimal solution. But sometimes this assumption is not confirmed. Because the benefit at a particular stage can lead to greater losses for the company given the entire period of decision-making in the analysis.

Multi-period models offer a comprehensive solution to the problem, taking into account the entire period of decision-making in the analysis.

Models are also divided into single-purpose and multi-purpose. Single-purpose models are defined when one clearly defined goal that needs to be achieved or several goals are combined into one complex goal. To optimize the model with several goals aimed at achieving the generalization, the development of a comprehensive criterion. Multi-purpose models are models in which the goal is to achieve several independent goals that are not combined into one complex.

Depending on the impact of the decision-making process on the analysis of fixed assets of the enterprise, we identified the following types of models in the study: situational models; organizational models; combined models.

Elements of situational models are actions that reflect the decision-making process in the analysis of fixed assets «horizontally», ranging from the event, the signal of the problem and ending with the evaluation of the effectiveness of implemented decisions. Elements of organizational models are actions that reflect the decision-making process in the analysis of fixed assets «vertically»: defining the stages of this process, the distribution of tasks on subtasks at each stage, synthesis of overall solutions based on common problems. Elements of combined models can be both elements of situational and elements of organizational models in the analysis of fixed assets of the enterprise.

It is also important to use mathematical optimization methods. Mathematical methods of optimization are ways to find parameters that maximize (or minimize) the objective function under various constraints and parameters, including time [3, p. 282]. The use of models helps the analyst to more systematize the decision-making process in the analysis of fixed assets of the enterprise and optimize the model itself.

Improving the use of fixed assets is one of the important ways to increase production efficiency. The characteristics of this process should be accompanied by a proper assessment [4, p. 66].

One of the main signs of improving the efficiency of use of fixed assets of the enterprise is the increase of the production level. In turn, the volume of production with the available and constant amount of equipment depends, first, on the efficiency of the working time during the shift, day, month, etc., that is on the extensiveness of their use; secondly, from the full use of the capabilities of the equipment in terms of its time, daily, monthly production capacity (intensity of use). Thus, the intensification and extensification of the use of existing equipment allows without significant costs to increase the efficiency of fixed assets and increase production [5, p. 313].

These indicators characterize the efficiency of use of fixed assets used in production activities, and the assessment of the efficiency of their use is related to the volume of manufactured products. The state

of fixed assets at the enterprise is characterized by a number of the following indicators. Recovery rate characterizes the share of fixed assets put into operation during the reporting period. The growth rate characterizes the level of growth of fixed assets or its individual groups over a period. The coefficient of suitability reflects the part of fixed assets suitable for use.

The renewal period shows the period of time after which the fixed assets of the enterprise will be fully renewed, if their renewal will be carried out at the rate of the reporting year. The disposal ratio characterizes the share of decommissioned fixed assets during the reporting period.

The use in the calculation of indicators of recovery and disposal of fixed assets at the beginning and end of the period, does not allow to fully compare these indicators and draw conclusions. To eliminate this shortcoming, it is necessary to use them in combination with the rate of recovery of fixed assets.

The depreciation rate of fixed assets characterizes the level of depreciation of fixed assets, and its analysis in the dynamics allows us to observe the efficiency of their reproduction. The downward trend in the indicator indicates the renewal of fixed assets. It should be borne in mind that the depreciation rate does not reflect the actual depreciation of fixed assets, due to the following factors: the amount of depreciation is significantly affected by the method of depreciation; valuation of fixed assets depends on the state of market demand; depreciation of fixed assets is not accrued, but morally they become obsolete.

Modeling the process of analysis of fixed assets and the efficiency of their use allows not only to influence the organization of the analysis process, but also to optimize the structural and logical parts of the methodology of analysis of fixed assets due to modern information technology.

Conclusions. Modeling the process of analysis of fixed assets and the efficiency of their use allows not only to influence the organization of the analysis process, but also to optimize the structural and logical parts of the methodology of analysis of fixed assets due to modern information technology.

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