

SCTMG 2020**International Scientific Conference «Social and Cultural Transformations in the
Context of Modern Globalism»****EFFICIENCY OF MANAGEMENT DECISIONS IN MODELING
THE ACTIVITY OF ENTERPRISES**

Tagiltseva Julia Arkadevna (a)*, Barashyan Vitalina Yurevna (b), Bortnik Olga
Aleksandrovna (c) Sheremeteva Natalya Aleksandrovna (d), Bychkova Irina Igorevna (e),
Galkin Vyacheslav Aleksandrovich (f)

*Corresponding author

(a) Rostov branch of Russian Customs Academy, 20, Budennovskiy, Rostov-on-Don, Russia, 79185065822@ya.ru

(b) Rostov State University of Economics, 62, Bolshaya Sadovaya, Rostov-on-Don, Russia, vitalinau@mail.ru

(c) Russian university of transport (MIIT), Moscow, Russia, bortnikrut@yandex.ru

(d) Rostov State University of Economics, 62, Bolshaya Sadovaya, Rostov-on-Don, Russia, nasheremetieva@mail.ru

(e) Rostov State University of Economics, 62, Bolshaya Sadovaya, Rostov-on-Don, Russia, irinabychkova@yandex.ru

(f) Russian university of transport (MIIT), Moscow, Russia, galkin_w@mail.ru

Abstract

The authors consider the issue of modeling management decisions from the standpoint of assessing its effectiveness and ensuring the safety of management. The main task is to find a business model that would allow taking into account both criteria of management decisions and efficiency and safety. Transport enterprises are a kind of unique industry. Transport has independent production and participates in the production and economic activities of other industries. The more interesting it is for us to consider the business model in management in a complex multifunctional enterprise. Railway transport in the world is considered the most environmentally friendly and the safest. The development of an effective model, which will be applied for a generally recognized safe transport enterprise, will allow adapting it for any company. To build and form the model, the authors investigate the approaches to the category of "safety" and "public safety", identify the types of public safety characteristic of corporate social responsibility of the enterprise. The authors use the system of effects estimation. It provides the assessment of management decisions in the field of social and environmental responsibility of the Corporation. The practical significance of the study is confirmed by the retrospective analysis of the performance indicators of JSC "Russian Railways". The comparison of these indicators in retrospect helped the authors to identify the stages and trends in the development of the industry, which later became the basis for practical testing of the developed model.

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1. Introduction

More than 25 years at the UN conference in Brazil, Russia was recognized as one of the most environmentally disadvantaged countries. Environmental safety issues are given attention at all levels of government, including at the level of the country's leadership. Transport is becoming a key source of pollution. The growth of cars, rail transport, the popularity of air transport between cities and human mobility in general, all these are the reasons for the increasing number of transport in human life. In the modern world, the formation of a basis for sustainable development for newly created projects is becoming a leading trend in all sectors of economy.

2. Problem Statement

In a broad sense, the sustainable development implies economic development and the increase in the welfare and quality of life of the current generation, while preserving natural resources as fully as possible.

Categorizing the definition of "Public safety" is a complex process. It is the result of the combined efforts of all authorities and administration, as well as the efforts of public organizations and citizens. Being a complex multifaceted phenomenon and, in addition, a subjective evaluation factor, security falls into the subject field of various Sciences, including economic, social and political.

Security issues have been studied both in our country and abroad. The increased interest in solving the problems of economic security was studied in the works of Abalkin and Glazyev. According to scientists, the system approach should be considered as a basis for solving problems of environmental and economic security (Abalkin, 2002). Therefore, each element of the security object as a system should be able to consistently perform its functions (Abalkin, 2002). Thus, the most important place among the types of public security is economic security, which together with environmental security provides a high level of economic development of society (Tagiltseva, Kuzina, & Kuzina, 2017).

In the last two decades, the concept of "green" economy, which is often considered an integral part or continuation of the idea of sustainable development, has become widespread in the foreign scientific community. It should be noted that these two concepts are based on fundamentally different ideologies. The concept of sustainable development considers the environment only as a set of resources for the functioning and development of the economy, while the concept of "green economy" considers the economy part of the environment, which does not allow for significant economic development, since "it is impossible to expand the sphere of influence in a limited space" (Lawson, 2006, p. 25). However, despite differences in ideology, the practical component of the "green economy" in the form of safe economic projects is quite consistent with the goals of sustainable development.

Thus, in the modern world more and more attention is paid to the projects of "green economy". Russia will inevitably follow the global trends. However, the inertia of the Russian economic system does not make it possible to immediately move to "green" economic projects. In most cases, there is no set of environmentally sound projects. It is desirable that all new projects meet the requirements of environmental safety. To do this, even before the implementation of projects of any kind at the planning stage, it is

necessary to assess the economic efficiency of the enterprise and society. Therefore, the search for an alternative model for making effective and safe management decisions remains an urgent topic for research.

3. Research Questions

Currently, railway transport largely sets the pace of life of the country. It is a reliable partner of industry. It makes a large-scale contribution to the mobility of the population, stimulates technical and technological innovations and invests in the real sector of economy. Russian Railways, as a key representative of rail transport, is the leader in terms of contribution to Russian economy. Rail transport has special advantages. They allow focusing on shippers who need to transport large-capacity cargo over long distances. Analyzing the volume of cargo turnover in retrospect for 2007–2018 (Figure 1), it can be concluded that for 10 years the turnover of the company is growing annually.

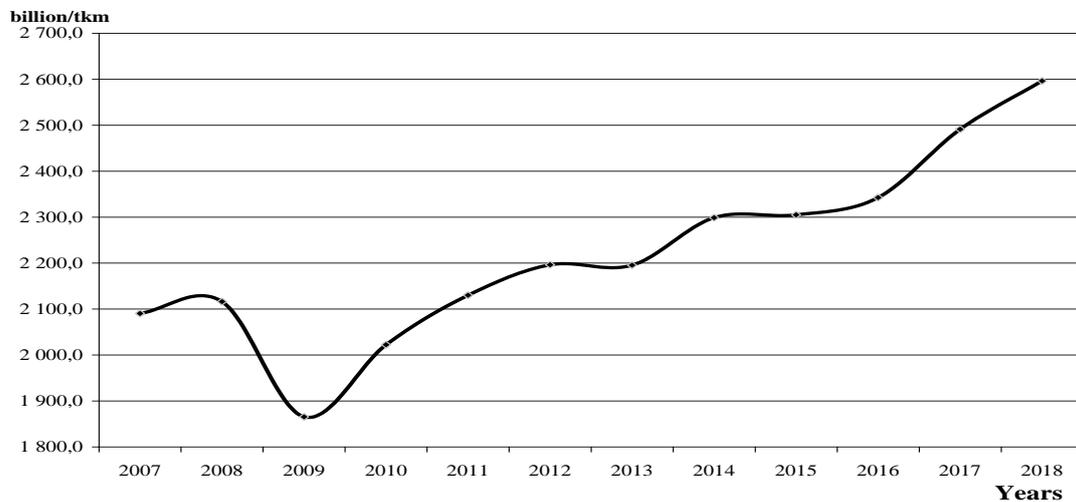


Figure 01. Dynamics of cargo turnover of JSC " Russian Railways for 2007-2018, billion km

Such dynamics of the company's cargo turnover could not but have a positive impact on such a financial indicator as sales revenue (Figure 2).

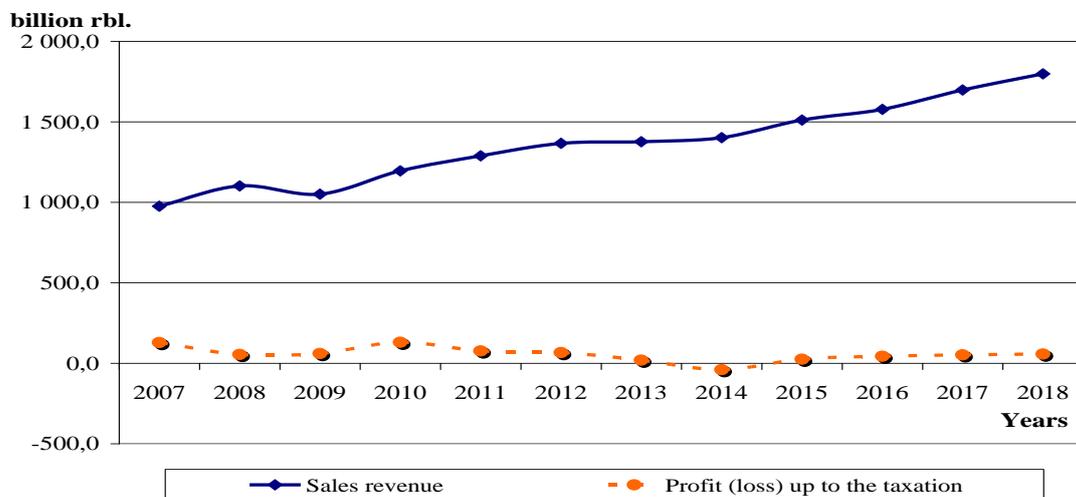


Figure 02. Dynamics of financial parameters of activity of JSC «Russian Railways» for 2007–2018, billion rbl

The increase in the indicator indicates that the organization receives more income from its core activities. Therefore, the main focus in the search for a strategy for managing a transport enterprise should be on reducing costs and reducing costs. This is a positive trend, if the relative reduction in the cost of providing freight services will not affect its quality.

It is worth assessing the dynamics of the second indicator presented in figure 2, "profit (loss) before tax". Compared to the dynamics of sales revenue and its annual growth, the profit indicator for the period 2007–2018 has minor fluctuations. This indicator indicates an increase in the profitability of products and a relative decrease in production costs and circulation.

Thus, it is necessary to analyze the cost structure (Figure 3), which will allow finding an alternative management solution to optimize management.

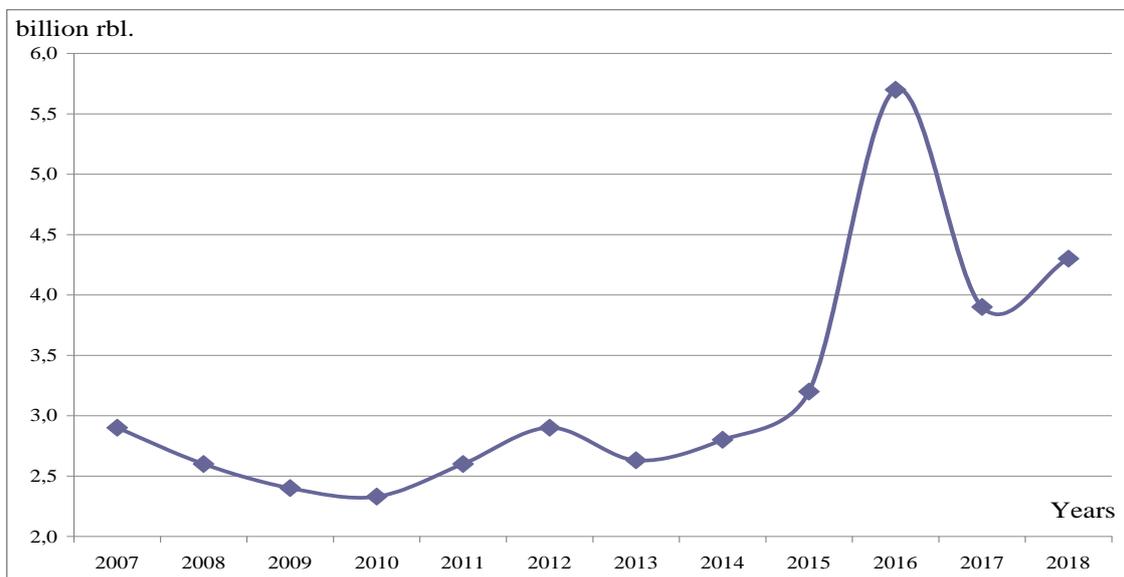


Figure 03. Dynamics of current expenses of JSC "Russian Railways" on environmental protection measures for the period 2007–2018, billion rubles

The aggregate value of the current environmental costs of the railway transport enterprise is the sum of the costs of ensuring environmental measures aimed at the prevention of damage. The Environmental strategy of railway transport development adopted by Russian Railways until 2030 has affected the annual increase in current environmental costs. However, the damage to the environment caused by the operation of railway transport facilities is not reduced. Environmental charges for excess emissions exist and are paid for by company profits. The key elements in the structure of current costs are the costs of the use and disposal of waste production. The dynamics of production waste generated as a result of the activities of JSC RZD for 2007–2018 is presented in figure 4.

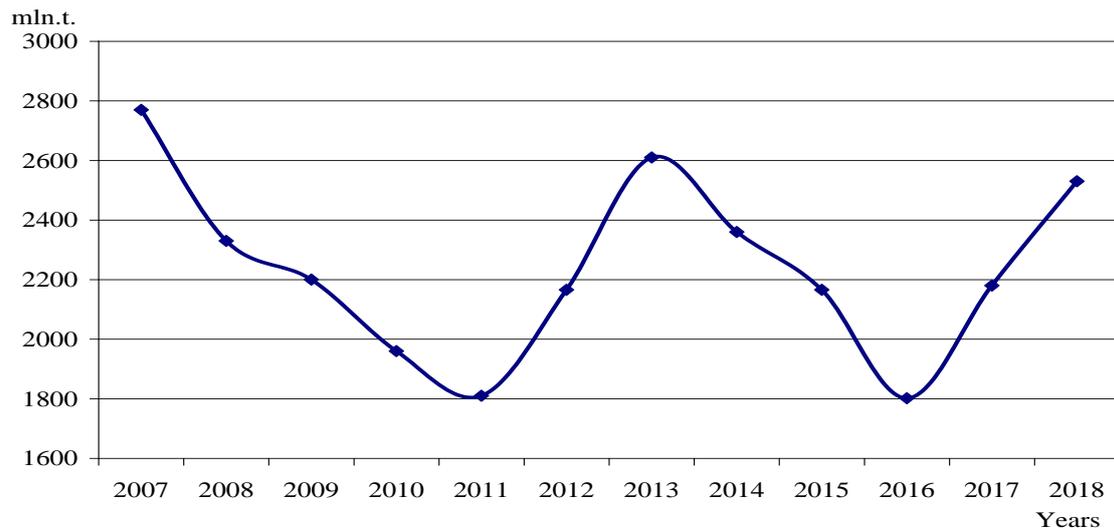


Figure 04. Dynamics, the formed production wastes, as a result of activity of JSC «Russian Railways» for 2007–2018, mln. t

When comparing the presented performance indicators of JSC "Russian Railways" can be divided into three stages of development can be divided into three periods:

1. "Mutual movement" 200–2012. This period is characterized by a direct dependence of cargo turnover and profit of the enterprise and the formation of waste production and consumption. The growth of economic efficiency of the enterprise is achieved by increasing the environmental load. Management environmental management is absent as a category. Managers of a company do not accept them. The development of the company's Environmental strategy begins.

2. "Stagnation" of 2012–2014. This period can be described as the lack of growth of turnover and profit of the enterprise with an increased amount of waste generated production and consumption. The stage when there is a rethinking of decisions search for directions to improve the efficiency of activities. The state "imposes" a line of conduct. 2013 was declared the year of environmental protection. A corporate environmental program has been adopted. An environmental management system is being implemented.

3. "Search for results" 2014–2018. The period is characterized by an inverse relationship between profit and waste production and consumption. The increase in profit is associated with a decrease in the environmental burden, the involvement of the resulting waste in re-production. There is a concept of "management environmental decision". The level of used, neutralized waste production consumption has a positive upward vector.

One of the areas that are implemented during the "search for results" is the availability of sources of additional income and resource conservation.

The direction of cash flows to environmental protection, in particular work with waste generated as a result of the company's activities, helps to reduce the harm caused and, accordingly, the amount of damage. But the damage is the cost of the enterprise, and therefore the value is inversely proportional to its profit. Therefore, when shifting the focus from the public sector to the polluter, it is necessary to

improve the approach to assessing the quality of environmental management decisions (Tagiltseva et al., 2017).

It should be borne in mind that working with production waste can become not only a cost, but also a source of new income. Thus, part of the neutralized waste can be used in the production process or neutralization and disposal of waste of other enterprises at their landfill can bring additional income.

4. Purpose of the Study

The key objective of the study is to propose a model of enterprise management in the transport industry by making effective and safe management decisions.

The subject of the study is management decisions that provide the concept of sustainable development of the enterprise in the aspect of corporate social responsibility.

The purpose of the study is achieved by solving the following problems:

- To identify approaches to assessing the effectiveness of management decisions in terms of security;
- To analyze the indicators of production and economic activity of the transport enterprise in relation to environmental damage to the environment;
- To propose a model of effective safe management decisions to ensure sustainable environmental and economic development of the transport industry.

The working hypothesis of the study is the assumption that the developed model of management decision-making will allow in the strategic perspective to reconcile the economic benefits of the transport enterprise and public safety.

5. Research Methods

The analysis of existing methods and approaches was carried out when choosing the tools for solving this problem. In our opinion, the methodology adopted in the mathematical theory of games is the most suitable for the implementation of such a study, which allows building a forecast of the situation development on the basis of existing assumptions about the behavioral preferences of market participants, as well as their expected gains from a particular action (Vasin & Morozov, 2015). In addition, it is also possible to calculate the optimal behavior strategies for each of the participants, which will give recommendations on making the best management decision.

6. Findings

In a broad sense, security means the functioning of certain components of the socio-economic system in an enabling environment. However, in real life there are always threats and dangers of different nature, which must be taken into account when managing a complex system. In this regard, security is manifested in the ability of society and the state to confront them, adequately respond or minimize their negative consequences (Zagrebnev, 2017).

The study and analysis of the works of national and foreign scientists showed the meaning of the concept of "public safety" multidimensional.

The majority of definitions assume allocation in structure of concept "safety" of the object exposed to danger, and the factors threatening its safety. At the same time, the necessary level of protection of the object from threats remains undisclosed. On the basis of the system approach, any security object should be considered as a system having a structure and separate interrelated and interacting elements (Figure 5).

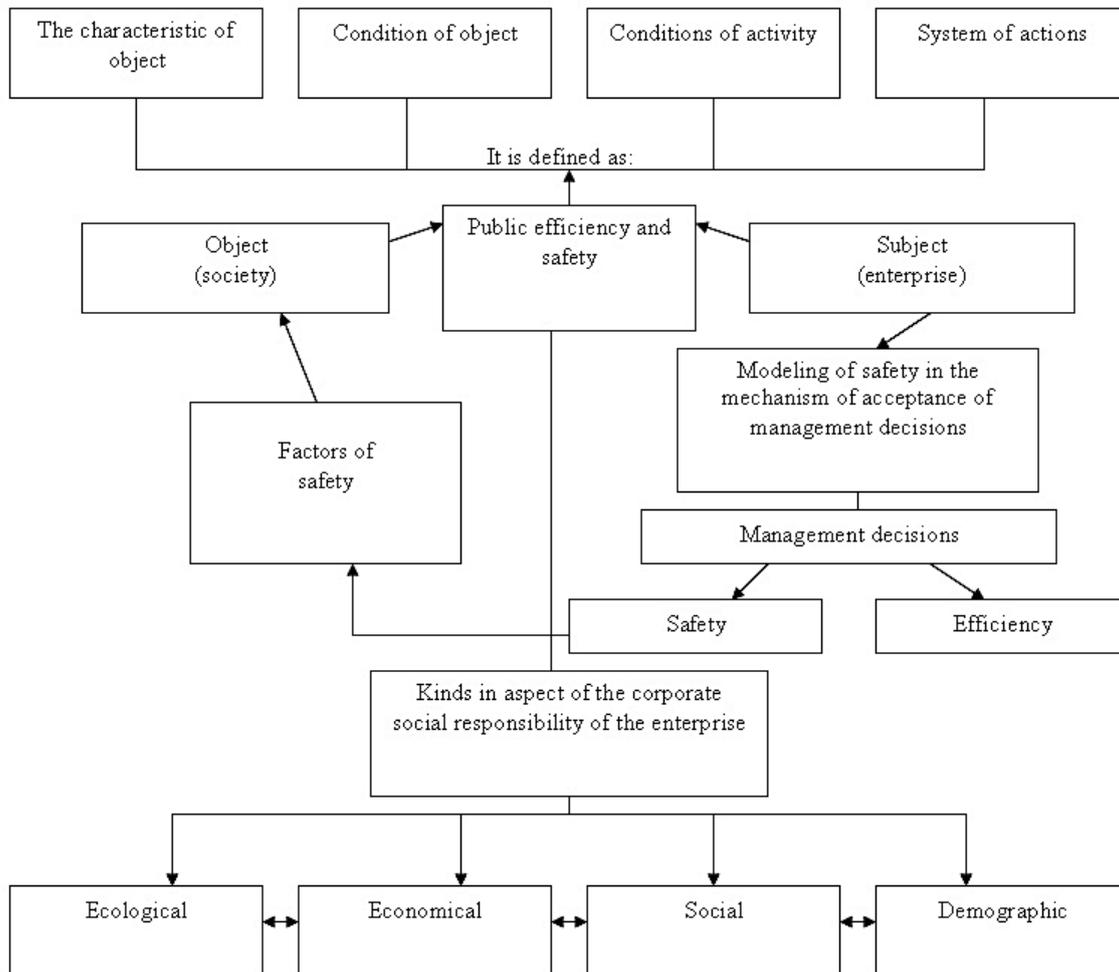


Figure 05. Modeling of efficiency and public safety of the enterprise

It is possible to assert the security of a security object from internal and external destructive factors only if the object as a whole and each of its elements separately are able to perform all their functions stably (Drozdov, Vasilenko, Kuzina, & Tagiltseva, 2018). The relationship of social, environmental and economic security can be characterized as socio-ecological and economic security, which should be understood as a stable state of progressive development of society, taking into account the rational use and protection of natural resources as the basis of its life under the diverse influence of external and internal factors (Drozdov et al., 2018).

At the same time, the effectiveness of management decisions is divided into organizational, economic, social, environmental, etc., while one type of efficiency can be changed at the expense of another.

To assess the production and economic activity in the aspect of corporate social responsibility, we consider it on the example of the railway transport company JSC "Russian Railways". It is necessary to

take into account that the assessment of the railway industry in terms of corporate social responsibility is an assessment of the economic efficiency and safety of enterprises and society (Figure 6).

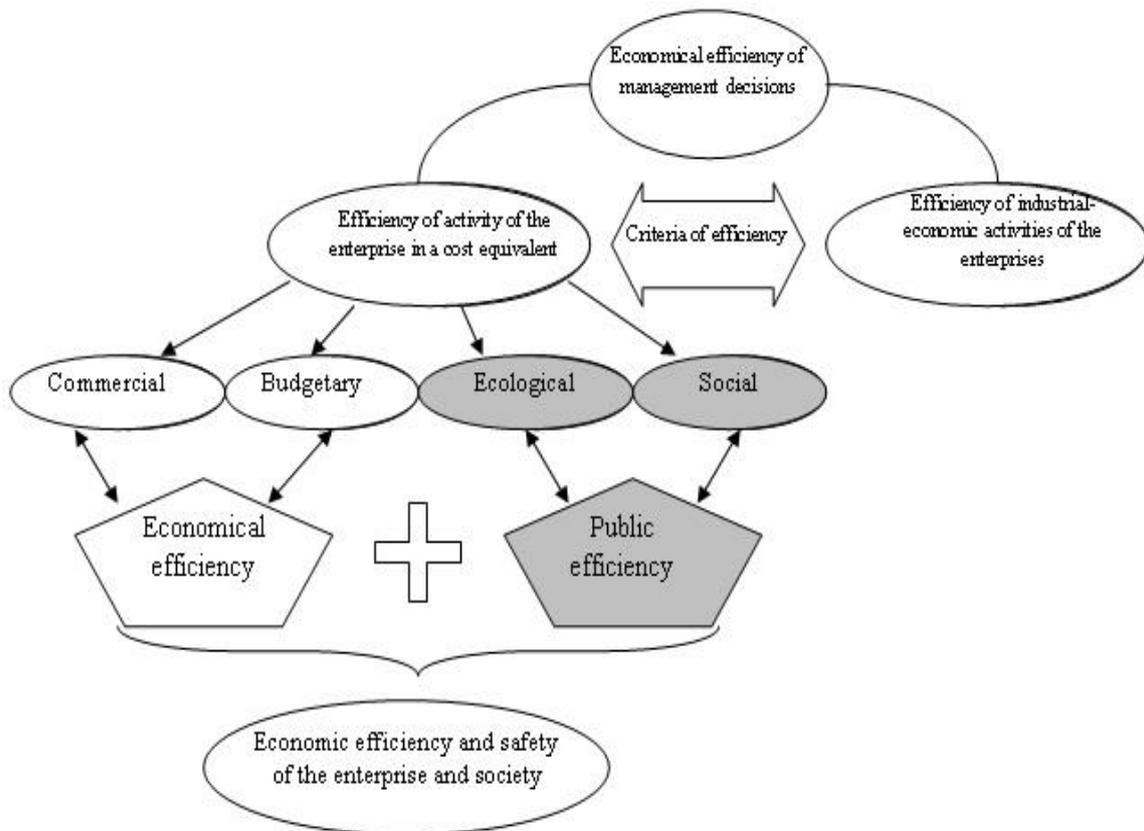


Figure 06. Approaches to assessing the effectiveness of enterprises in the aspect of corporate social responsibility

The improvement of management efficiency is almost identical to increasing the effectiveness of environmental management decisions at all levels of the hierarchy, as decision-making is the main tool of management influence; it is in the development, adoption, organization and control of decisions is the activity of both individual managers and the management apparatus as a whole. However, the task of determining the effectiveness of environmental management decisions is one of the most complex and controversial management problems and needs to be resolved.

7. Conclusion

In conclusion, we define a number of conclusions obtained during the study:

1. Public safety is a category that refers to the functioning of certain components of the socio-economic system in favorable conditions. In the aspect of corporate social responsibility, we distinguish its types: economic, environmental, social, demographic security.

2. Retrospective analysis of such indicators as the company's cargo turnover, sales revenue, profit (loss) before tax, current costs and waste generation showed that there are clear trends and it is possible to establish at a certain stage of the enterprise's operation whether management environmental decisions were made.

3. The effectiveness of environmental management decisions is defined as an assessment of the economic efficiency of enterprises and society.

4. The strategy of the enterprise should meet the requirements of corporate social responsibility in ensuring the safety and effectiveness of the development of the enterprise and society.

References

- Abalkin, L. I. (2002). *The Logic of economic growth*. Moscow: Instit. of Econ. RAS.
- Drozдов, N. A., Vasilenko, M. A., Kuzina, E. L., & Tagiltseva, Y. A. (2018). Modeling of efficiency assessment for enterprises economic activity in environmental system. 2018 IEEE Int. Conf. *Quality Management, Transport and Information Security, Information Technologies (IT&QM&IS)*, vol. 1 (pp. 98–102). <https://doi.org/10.1109/ITMQIS.2018.8524947>
- Lawson, R. (2006). An overview of green economics. *Int. J. of Green Econ.*, 1/1–2, 23–36.
- Tagiltseva, J. A., Kuzina, E. L., & Kuzina, M. A. (2017). Priorities in the provision of interstate 'balance of interests' in international relations. 2017 IEEE Int. Conf. *Quality Management, Transport and Information Security, Information Technologies (IT&QM&IS)*, vol. 1 (pp. 536–538). <https://doi.org/10.1109/itmqs.2017.8524961>
- Vasin, A. A., & Morozov, V. V. (2015). *Game theory and models of mathematical Economics*. Moscow: MAX Press.
- Zagrebnev, S. A. (2017). Regional security in the national security system of the Russian Federation. *Authority*, 10, 90–92.