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## OPTIMIZATION OF INVESTMENT FOR COAL MINES BASED ON NEURAL NETWORK MODEL

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**Purpose.** The main objective of the paper is to develop a system of economic and mathematical models for managing the investment activity of the coal mining enterprise, including improving the principles and methods for analyzing the profitability of investment projects and the optimal allocation of investments.

**Methodology.** According to the goals, data on investment activity of mines for 13 associations, every one of which consists of 3 to 7 privately owned mines, was used in this article over the period 2003 - 2011 to construct a model for determining the efficiency of investments, which allows to determine the profit of a coal mining enterprise from the implementation of an investment project. Unlike the existing ones, the group of factors peculiar to the coal mining industry, such as geological factors and technical properties of coal, was taken into account.

**Findings.** With the help of neural networks, a model was built based on 12 kinds of investment (9 kinds of investments into equipment, capital investment, portfolio investment, intangible assets investments) which are the most typical for a coal-mining enterprise.

The method of optimization of investment allocation on a coal mine was developed, which, in contrast to the existing ones, determines the optimal investment volume, which helps to maximize profits for 12 investment models.

Created economic and mathematical models solve such questions as:

- 1) analysis of the influence of geological factors and technical characteristics of coal on the efficiency of the coal mining enterprise and on the efficiency of investment;
- 2) analysis of the influence of volumes of 12 types of investments on the level of profit of a coal mine;

- 3) the determination of the amount that a coal mine can allocate to investing on its own expense;
- 4) profit determination from a certain investment project taking into account all the above-mentioned parameters;
- 5) the possibility of adjusting the investment project in order to maximize profits.

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**Key words:** coal industry, investments, statistically significant factors, economic and mathematical models, neural networks, optimization.

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