The Optimal Distribution of Production and Investments by Operating Units in Mining Enterprises*

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Abstract

This paper intends to present different models for determining the profitability of mining enterprises related to efficient mining investment process. After presenting a large literature review of the beginnings related to this issue, the article deals with models related to the optimal distribution of production and investments by operating units, in order to maximize the company's profits. To solve this problem, the mining operations that are considered are already sized, therefore, investments are already being made for the structuring of mines, at certain production capacities. The paper argues that the distribution of the total production volume, imposed by the plan, on the three mining units considered in our analysis cannot be raised, but of form dealing either with the surplus of production compared to the current capacities be distributed, so as to obtain a maximum profit overall, or with the way a given volume of production should be distributed, assuming that the exploitations work at critical capacities (capacity from which they become profitable), so as to obtain maximum benefits as a whole. In doing these, the paper presents a numerical example, introducing the general model of the distribution of mining production, so as to determine the optimal distribution policies of a production increase on the three mining exploitations in order that the total increase in profit is maximum. Hence, the second part of the paper presents some numerical examples of applying this model in order to demonstrate its validity in investment decision-making for one mining exploitation.

Keywords: mining industry, model, optimal policy distribution, production volume, maximum profit, investments