

AN APPLICATION OF MULTICRITERIA APPROACH FOR THE PURCHASE OF MINING COMPANY EQUIPMENT

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In the Amazon region the production of iron ore and bauxite is already consolidated as well as an production activity adopted by companies around the world. Brazil takes a prominent position in the bauxite ore production, with the 5th largest reserve in the world and a production that was estimated in 2010 about 29 million tonnes. An ore supply chain is extremely complex because it consists of a linked system of several subsystems. Thus, an enormous effort is required for maintenance and purchase of equipment to maintain the full operation. However, the choice of what equipment purchase is a hard process which involves a great expenditure of time, because it involves the opinion of different people simultaneously, and each one has a criterion that influences the choice. In this kind of situation, which there are several alternatives to choose and different criteria that influence the choice, it becomes feasible to use of methods of Multicriteria Decision Support. Therefore, this study's objective is to use the method ELECTRE III to support the purchasing process, based on the creating of an equipment's rank to choose which should be purchased first in a bauxite mining company. The company's managers elected four criteria that influence the purchase of equipment: cost, severity, urgency and trends, and each criteria received the average weights between 0 and 10. The six alternatives (A, B, C, D, E and F) were also scored between 0-10, represented by the average, to over-analysis according to the criteria. The Dauphine software, provided by the University of Paris was used to exploitation of relations. The severity criterion was the one which received the weight of greater importance among the criteria, so the alternative A was the first in the ranking, followed by alternative F, B and D. Alternatives C and E are indifferent when compared with each other, and that means the decision-makers believe that these alternatives have the importance and intensity unmatched when analyzed with the alternatives B and D. In this case there is no reason to believe that there should be a preference or indifference between them. The ELECTRE III method proved be adequate for the process of ordering equipment of the mining company and situations which different factors as well as different opinions of decision makers involved influence the choice.

KEYWORDS. Decision making, ELECTRE III, Bauxite.