SUPPLIERS SELECTION AND ORDERS ALLOCATION USING ATTRIBUTE BASED ANT COLONY SYSTEM AND GOAL PROGRAMMING

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ABSTRACT

Suppliers selection can be very critical to the company which is daily required to produce continuously. The errors at suppliers selection may become thing that will disrupt existing production schedule can even more makes companies stop operate for a while. This is related to the supplier function itself as raw materials provider and other supporting materials that will be used in the production process. Often there is a change in company’s policy at suppliers selection requires method that can effectively and efficiently selecting suppliers and allocating orders optimally.

Problems encountered in this study is how to determine supplier selection and order allocation that fit to the company’s criteria. Attribute based Ant Colony System (AACS) method is used to select suppliers and goal programming to determine the order’s allocation. The purpose of this study is to be able to produce optimal solutions at suppliers selection receiving orders that meet some objective functions that fit to the company’s criteria to evaluate suppliers.

The results of this study are the amount of the allocation order to the sulfur’s supplier: (1) Supplier 1 3700 tons, (2) Supplier 2 900 tons, (3) Supplier 3 100 tons, (4) Supplier 4 150 tons, with a minimum total purchase price of sulfur is $510,000. The orders allocation to aluminum hydroxide’s suppliers: (1) Supplier 5 3,000 tons, (2) Supplier 6 2942 tons, (3) Supplier 7 0 tons, (4) Supplier 8 1008 tons, with a minimum total purchase price of aluminum hydroxide is $2,137,370.

Key words: Suppliers Selection, Attribute-based Ant Colony System, Goal Programming