

TASK ASSIGNMENT OPTIMIZATION WITH THE USE OF PESBAT LINEAR PROGRAMMING TOOL

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Abstract:

The article presents task assignment problem and the role that modern linear programming tools may play in its solving. Task assignment problem is a case of the assignment problem, which is one of the fundamental combinatorial optimization problems. Its specific formulations can be found in logistics (e.g. driver assignment problem), computer science (e.g. memory management) and other fields of science and business. Various methods and algorithms have been created or adapted to solve the assignment problem, and modern linear programming and optimization tools like Microsoft Excel Solver, which contain implementations of these algorithms, provide a possibility to solve diverse cases of the assignment problem with minimum effort and time.

The article addresses widely known task assignment problem in business, its sources and ways of solving or reducing its negative impact on business processes effectiveness. The paper contains also general overview of modern linear programming tools that can be used for task assignment and describes Microsoft Excel Solver Add-in as a tool for business process optimization.

The main part of the article is a presentation of VBA based optimization tool called PESBAT developed by the authors and the case of task assignment process optimization in the enterprise that offers photoanalytical services. Pilot use of a PESBAT tool showed that it allows to reduce time needed for task assignment, gives more balanced workload for employees but also indicated the optimization possibilities of other areas of described company, like route optimization and reports preparation.

Keywords: Task assignment, Assignment problem, Process optimization, Workload balancing, Optimizing in Excel, Solver, Linear programming