ANALYSIS AND SOLVING THE PROBLEMS OF PRODUCTION GROUPS FORMATION *

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The successful activity of a modern enterprise is substantially determined by the effectiveness of staff selection and formation of various kinds of functional groups. Creation of such groups requires consideration of various factors depending on an activity of the groups. For example, when forming production groups, it is necessary to make appointments to posts that ensure the quality and timeliness of work performance, observance of working conditions, accounting for interpersonal and hierarchical relations in the team and other requirements. In the study and solution of such problems, models and methods of discrete optimization are applicable.

In this article, the tasks of forming production groups are considered, taking into account interpersonal, logical and resource constraints [1-2]. For these problems, integer programming models are built, questions of their complexity are studied, and algorithms for their solution are proposed. One of them is based on the branch and bound method, and the search for the optimal solution is reduced to analysis and solution of a sequence of assignment problems. Branching is made based on fulfillment of conditions of consistency of interpersonal and logical restrictions between applicants. The software implementation of the algorithm was done, and a computational experiment was carried out. The purpose of the experiment was to analyze the algorithm and compare it with the CPLEX optimizer. Initial data for test suites was generated randomly. Obtained results showed the potential of the algorithm for further applications.

References

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