OPERATIONSFORSCHUNG IN DER SOZIALISTISCHEN WIRTSCHAFT

(Operation Research in the Socialist Economy)

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The complexity of the process of reproduction of the socialist economic system and the requirements of the contemporary technical-scientific revolution call for the use of scientific methods in the management of the socialist economy. The determination of the ways of continuous increase of economic efficiency is the crucial problem of organization and management in all sectors and at all levels of the socialist economy. The methods of operation research represent valuable instruments of optimization of the functions of efficiency through the mathematical modelling of the economic-organizational and of the production processes.

The wide field of application of operation research requires a permanent contact with all fields of application.

The book is a result of the intense studies and of the close collaboration between research workers and specialists in production. It groups the problems presented in 3 parts, as follows:

— the foundations of operational research;
— mathematical models with applications in economy;
— mathematical models and solving methods.

The first part of the book presents the problems and the development of operation research in the conditions of the economic system of the German Democratic Republic, regarded as a unitary whole. The attributions of the managers and specialists in system analysis to conceive and achieve system and unique models are presented.

The two chapters entitled: 1) Problems of Operation Research in the Economic System of Socialism and 2) Method of Operation Research refer to problems, such as: operation research — a means of achieving the economic system of socialism, the foundations of operation research, basic principles for the building of the system of operation research models, modelling and the building of algorithms.

The second part presents various models which have been applied in the German Democratic Republic, the way in which they were conceived and the efficiency obtained as a result of their application. Among these models, we mention the models on long-term planning, yearly planning, technological planning, the efficient programming of production and the shaping of materials.

Various applications of the above-mentioned models as well as of the method of the critical path analysis and the problem of transport are presented.

The third part comprises a substantiation of the mathematical models and the ways of solving them. This part presents theoretical problems on the theory of probability and mathematical statistics, linear programming, linear programming in whole numbers, parametric linear programming, storing stochastic models, the theory of succession, simulation of the economic processes. All these problems contribute to a detailed description of the models presented in the second part.

The book offers the possibility for a theoretical and practical covering of the main chapters of operation research and the relation of this modern and vast discipline with economic cybernetics and electronic data processing.

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