D.I. Golenko, H.G. Lauenroth, H. Schultze, G. Schulze

KYBERNETIK ZUR STEUERUNG ÖKONOMISCHER PROZESSE GRUNDLAGEN UND ANWENDUNGEN

(Cybernetics in the Management of Economic Processes-Methodological Fundamentals and Applications)

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The working hypothesis of the authors of the present study consists in the fact that the complexity of the real economic processes makes it necessary to use to an equal extent economic cybernetics, operational research and electronic data processing for a more exact utilization both qualitatively and quantitatively of the management objectives.

The main aim of the study is to present the basic problems of the analysis and synthesis of economic processes with exemplifications on applications of cybernetic methods in rationalizing the processes of the socialist economy.

Starting out from the general cybernetic methods of the economy including the method of cybernetic analysis and synthesis, the study further deals with the characteritics of big systems as models of economic processes.

The basic notions and methods of the cybernetic modelling of economic processes are concretized through the use of statistic-mathematical methods, mainly of analytic and simulation models on the example of the harbour industry and economy.

The aim of the cybernetic models, the fundamentals of economic cybernetics and the methods of cybernetic analysis and synthesis are dealt with in the first chapter. The aim of the second chapter "Big Systems as Models of Economic Processes" is to describe the characteristics of big systems (man's activity in modelling reality, the transformation of the matter, energy and information, the complexity, the complicated and stochastic character of processes, multistability, the way of removing perturbations, the development of the system, its adaptability) and of the mathematical methods in the analysis and synthesis of big systems.

These first two chapters which have a general theoretical-methodological character are followed by a basic chapter (3) which comes to concretize various models on the management of economic processes, namely in vehicle building, the metallurgical industry and in the management of harbour processes.

The formulation of the problem on the algorithmic modelling of the management processes in vehicle building is followed by an analysis of the management of the considered production process after which the algorithm is presented as well as the possibility of developing the algorithm system in connection with the development of the automatic management systems.

The subchapter dealing with the management of production processes in the metallurgical industry presents the problems of the mana-

gement of production processes of the continuous discrete type, considerations on modelling the Martin furnace-rolling line complex, the use of algorithms of service systems and their structure.

The substantiation of the necessity of a qualitative description of production activity in ports, made at the beginning of the third subchapter is continued with the modelling of production processes in ports by taking into account the typical characteristics of transhipments in seaports and the wharf as a two-phase service system, a subchapter which concludes with a presentation of operative management of the production processes in ports.

The final chapter of the work (4) just like the previous one is a chapter with an important share, in which authors apply to a process simultation to solve management problems.

After presenting the simulation of the production capacity and of storage in motorvehicle construction, the study details a simulation model at an enterprise level, called BES 1.

The main aim pursued by this simulation model consists in formulating the complex functions and decisions of an industrial enterprise and in its utilization in the training of economists and of the managerial staff in the economy.

The construction of the model was followed by passing it on the R.300 electronic computer. The programme allows for a simultaneous simulation of several production processes, enabling in this way the carrying out of an enterprise game by subdividing a batch of students into decision-making collectives.

Since the initial situation is identical, a competition between the subgroups is taking place which contributes to a better understanding of various economic processes and of the implications of economic decision by the participants.

The final part of this chapter presents stochastic model of a network type used in process management and optimization.

Each chapter ends with a rich specialist literature.

The conclusion deriving following the survey of this study of a high scientific standard is that it is, indeed, a fine and useful blending of the fundamentals of economic cybernetics, of modern mathematical and computation instruments with the problems posed by the management of enterprise processes.

"Kybernetik zur Steuerung ökonomischer Prozesse" is the outcome of a joint work of the authors, of prestigious academic staff of the *Economic-Statistic Institute in Moscow, of the "Martin Luther" Univer*sity in Halle-Wittenberg of the Humboldt University in Berlin and of the Wilhelm Pieck University in Rostock.

The work is intended for the modern economist, a specialist in automatic scheduling of management economic processes, for analysts and for students who are training to become specialists in economic planning and cybernetics.

Dr. Camelia Raţiu Suciu