

Τεχνικές Προσομοίωσης στη Διοικητική Επιστήμη

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Abstract

This book delves into the theory and application of the Simulation in Management Science methodology. This paper develops the theory and application of Simulation in Management Science. It presents basic concepts such as "system" and "model" in detail, with a particular focus on simulation models. This is followed by a presentation of the methodology for developing models in Business Administration, recording, description, investigation, comparison, prediction, and optimization (descriptive, perspective, predictive, optimization), and then concepts such as: "entities," "activities and processes," "events," "active passive or idle states," and a set of tools that drive simulation models. The basic principles underlying discrete event simulation are established, namely random numbers, random variates generators, input data analysis, diagrammatic

representation, and basic programming tools. Particular emphasis is placed on the concepts of verification and validation, and the techniques that establish the reliability of a model are analyzed. The theoretical background is completed with the presentation of statistical tools for output statistical analysis and methods for reducing the variability and autocorrelation of results (variance reduction techniques). The textbook concludes with the development of a case study which, in addition to all the other examples in the book, integrates the techniques and tools into a holistic approach, using a sophisticated simulation tool (ExtendSim), which is also presented in its basic functions and alternatively with the use of open source tools (JaamSim). The book is accompanied by an extensive and up-to-date international bibliography and articles.

