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Managing Complexity

Challenges for Industrial Engineering
and Operations Management



Springer

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Preface

This volume collects a selection of the best papers presented at the joint 7th International Conference on Industrial Engineering and Industrial Management, CIO 2013, and the XIX International Conference on Industrial Engineering and Operations Management, ICIEOM 2013. They are a good sample of the state of the art in the field of Industrial and Operations Management.

The field of Industrial Engineering (IE) is defined by the Institute of Industrial Engineers (IIE) [<http://www.iienet2.org/>]: “*Industrial Engineering is concerned with the design, improvement, and installation of integrated systems of men, materials, equipment and energy. It draws upon specialized knowledge and skill in the mathematical, physical and social sciences together with the principles and methods of engineering analysis and design to specify, predict, and evaluate the results to be obtained from such systems*”.

A more recent definition of IE is proposed by a research group involved in the IESE project (Industrial Engineering Standards in Europe) [<http://www.iestandards.eu/>]: “*The branch of engineering that engages in the study of how to describe, evaluate, design, modify, control and improve the performance of complex systems, viewed over time and within their relative context.*”

These two definitions show the evolution of the field, both in methods and scope, following the evolution of Management for sustained wealth generation. The focus of Management has evolved from product design and manufacturing towards developing distinctive capabilities of the firm to be shared with other firms, all along the project management. Managing for competition has been replaced by collaborative management.

This change of focus and the support of new communications technologies has broadened the very scope of the field: not just from products to services but to the analysis, design and control to improve the performance of any physical landscape populated by social agents. This new focus demands new skills and methods to manage complexity. Thus the title of the volume: Managing Complexity.

The papers presented in this book, address methods, questions and applications to the Business Strategy, Modelling and Simulation in Operations Management, Logistics and Production, Service Systems, Innovation and Knowledge, and Project Management.

The contributions have been arranged in four chapters:

- Management
- Production
- Logistics and Supply Chain
- Methods and Applications.

We want to express our gratitude to all the contributors and reviewers.

October 2013
Valladolid, Spain

Cesáreo Hernández
Adolfo López-Paredes
José M. Pérez-Ríos

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