

## BOOK REVIEW

### **Supply Chain Engineering: Useful Methods and Techniques.**

Dolgui, Alexandre, Proth, Jean-Marie,  
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Supply Chain Engineering (SCE) is a branch of engineering dealing with the optimization of complex processes or systems. It is concerned with the overall process of planning, implementing, and controlling what goes on at the supply chain in order to satisfy customers' needs in a quick, efficient manner. As carried out in practice, supply chain management can involve everything from supervising the exchange and storage of raw materials, taking inventory of all work that is in process, as well as the movement of goods from their point of origin to the point where they will be consumed. Its underlying concepts overlap considerably with certain business-oriented and project-driven disciplines such as Operations Management and Logistics, but the engineering side tends to emphasize extensive mathematical proficiency and utilization of quantitative methods.

From that perspective the SCE can be seen as the systematic analysis and redesign of supply and logistics networks and supplier management practices to optimize the performance of complex supply networks. Moreover the SCE techniques can respond to the pressures of the competitive global marketplace by integrating all the activities in supply chains, adding flexibility to the system, and drastically reducing production cost. In this context the book addresses the technology and organizational challenges that impact successful distribution of goods and services up and down the value chain and fosters practices that promote continuous process improvement.

The book explains how to develop skills and provide new concepts applicable to the management of supply chains. It helps also to understand progressive approaches to integrated supply chain management and understand the linkage between functional areas

in an integrated supply chain, as well as develop abilities to recognize structure and analyze decisions that have supply chain implications and understand how traditional business models could be transformed in current and future manifestations of electronic commerce.

The book consists of eleven chapters spanning an impressive wide spectrum of issues allowing one to explain how to make a schematic plan from supplier's supplier to the customer's customer and manage/execute the plan.

Chapter one gives an overview of selected pricing strategies and standing behind of them mechanism linking costs, price and margin. Then their extensions to stochastic pricing models with salvage values are provided in Chapter two.

Chapter three introduces the concept of outsourcing in terms of a multicriteria problem as well as the strategic outsourcing in the case of duopoly market.

In turn, Chapter four concerns the inventory management and supply chains in the context of selected models standing behind of some policies, e.g. echelon and stock policies as well as production smoothing and pull control problems.

Chapter five introduces RFID technology and its applications changing the nature of data collection while eliminating the need for any manual scanning.

Chapter six begins by exploring selected cases of manufacturing system organizations. One of the most interesting concepts discussed in this chapter regards reconfigurable manufacturing systems (RMS). Then for the case of lean manufacturing systems the problem of design and balancing of paced assembly lines is discussed from the point of view of different methods in Chapter seven. Some stochastic

generalizations of the assembly line balancing models and relevant solution methods are submitted in Chapter eight.

Chapter nine goes through dynamic scheduling and real-time assignment. It shows how static scheduling approaches can be replaced by dynamic ones as well as real-time assignments approaches providing a near optimal solution in real time.

Chapter ten goes through the manufacturing facility layout design process. It then walks through the selected problems of manufacturing entities location, balancing of the manufacturing entities, facility layout in a dynamic environment and so on.

Chapter eleven focuses on optimization techniques employed in domain concerned with warehouses design and management as well as warehouse location.

The authors have followed a uniform approach to discuss the above mentioned issues. Each section begins with an introduction followed by reader friendly structure of subsections clarifying the matter considered, and ends with triple containing conclusions, list of references and suggestions of further reading. I feel that it will be very helpful for beginners in their quest to learn the concepts quickly and easily.

Overall, the book is very informative and presents a wide range of problems in supply chain engineering that are either solved, being solved or need be solved. However some issues concerned SCE such as providing insights on how to deal with or manage the supply chain risks, and on declarative programming techniques aimed at problem oriented decision support tools designing still remains open.

The book is suitable for a rather broad audience. It addresses the mature researcher and scientist (who already has a substantial background in this area) and offers challenges to advance the field further. I personally enjoyed reading the X-manufacturing systems (Chapter 6) which treats the reconfigurable manufacturing systems (RMS). In my opinion, the RMS can be seen as a solution similar to many reverse problems raised in reverse logistics, reverse manufacturing and so on. Such kind of problem focuses on hardware and software architectures sufficient for reaching assumed production goals. So, I would like to recommend the book to every young researcher seeking intellectual adventure and who wants to conduct research in the area of Supply Chain Management, Operations Management, and Logistics.