Barrie Michael Cole

## Supply Chain Optimization under Uncertainty

Supply chain design for optimum performance

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"[...] an interesting and worthwhile addition to the literature, especially since there are few books or monographs that deal with supply chain design under uncertainty."

Ignacio E. Grossmann, Rudolph R. and Florence Dean University Professor, Chemical Engineering Faculty, Carnegie Mellon University

## **Summary**

Drawing on cutting-edge research, this book proposes a new 'Supply Chain Optimization under Uncertainty', technology. Its application can bring many proven benefits to supply chain entities, any associated service providers, and, of course, the customers.

The technology can provide the best design and operating solution for a Supply Chain Network (SCN) that is subject to any prevailing conditions of Operational Uncertainty (OU). A SCN is defined as a network of production facilities, distribution centers and retail sales outlets. OU is defined as any relevant combination of i) multiple process objectives e.g. a business needs to maximize operating profits and to minimize inventory levels, ii) fuzziness (<, <=, >, or >=) e.g. sales <= 1500 t/mth and iii) probability e.g. sale of fertilizer is dependent on probabilistic rainfall. Following this method always

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enables the determination of realistic optimum supply chain solutions, since the effects of any operational uncertainties are always provided for.

## About the author

Barrie Cole obtained his BSc Chemical Engineering degree at the University of the Witwatersrand in 1979. He then embarked on a career in the chemical industry, starting in chemical plant investigations, before moving to production management and then finally to business development. He then transferred to the burgeoning computer industry in 1988 progressing from project management responsibility through to direction of operations in 1997. Following a lengthy recovery from a motor vehicle accident in 2001, he pursued an academic career, obtaining an MSc Eng.in 2008 and a Ph.D. Eng. (Chemical) in 2014. He has published in journals such as the International Journal of Operational Research and the American Journal of Operations Research and has received a number of academic awards.

The book is arranged in two parts. The first part covers the theory and recent research into supply chain optimization under uncertainty. The second part documents the application of the newly proposed technology to an agricultural fertilizer's (NPK, South Africa) supply chain.

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