

## **ON SUPPLY CHAIN DYNAMICS: FROM CONCEPTUALISING TO EXECUTING SYSTEMS DYNAMICS, SYSTEMS THINKING AND SYSTEMS ENGINEERING MODELS**

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Revisiting the concepts and approaches of the 'systems movement' and their development into current operations management methods, we outline their influences on supply chain management and highlight their application. Systems theory advocates a holistic approach to supply chain design and management, bringing together qualitative and quantitative features that may be summarised as systems thinking, system dynamics and systems engineering. We identify methodological considerations with examples of application including the exploitation of causal loop diagrams, control block diagram formulation and associated transfer function techniques, and system dynamics simulations. We conclude that the grand challenges of today's, and the future's, supply chains mean an interdisciplinary approach to problem solving is required.

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