

Call for Papers
Special Issue on System Dynamics: Emergence, Reinforcement, Adaptation and Traps
Journal of Operations Management

Special Issue Editors:

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Background

The last decade of OM empirical research has shown that the full performance-impact of operating decisions is far more complex than previously realized. Often, linear models of variance fail to sufficiently capture this. Over the same time there have been numerous calls in the OM and broader management communities for further research into the dynamics with which real-world systems react (Choi et al. 2001, Watson et al. 2007, Sterman et al. 2007). Responses to these calls include the introduction of constraining factors in analysis (Siemsen et al. 2008), feedback loop modeling (Bendoly 2013, 2014) and, more severely, models of relationship-performance spirals and self-reinforcing traps (Autry and Golicic 2010; Reppenning and Sterman 2002). Mixed methods, combining simulation and empirical analyses have also been used (cf. Choi et al. 2012), highlighting the potential value of a unique research vantage point for OM empiricists: **System Dynamics**.

System Dynamics models have widespread application across a variety of fields such as strategy, finance, economics, healthcare, education, and public and environmental policy. Operations Management scholars have used system dynamics models to describe how the structure of complex business systems interact with the behavior of the actors within those systems. In turn they have been able to enrich our understanding of the sources of persistent volatility in supply chains, poor service quality and schedule overruns in project management. They have also helped account for failed efforts to improve process and product quality (Oliva and Sterman 2001).

Importance of related research

Throughout the management sciences there remains a tension between research that is rigorous and that which is useful to practitioners; the so called “knowing-doing gap” (documented by Pfeffer and Sutton 2006 among many others). Closing the gap constitutes an outstanding research challenge: the development of empirically grounded, practical operational models that realistically capture the complexity in modern systems – accounting for technical, as well as social and psychological factors. Although as a community we are aware of this challenge, there remains a lack of empirical OM studies that truly look beyond cross-sectional, single-period, linear-effect variance accounts. Too few make any attempt to incorporate stock-and-flow dynamics, feedback processes, complex nonlinearities and delays. If OM is to move ahead, more integrated approaches are required.

Objective of the special issue

The objective of this SI is to shine a light on research that meaningfully leverages system dynamics concepts to further inform critical phenomena in OM (eg. emergence of supply chain relationships, learning in project groups, strategic-tactical performance spirals). In doing so, submitted papers should capture one or more of the following:

- 1) Critical feedbacks mechanisms among the actors and elements of an operating system
- 2) Important accumulations of inputs, resources and/or capabilities
- 3) Complex nonlinearities or time delays connecting decisions to outcomes
- 4) The endogenous generation of dynamics from model structure
- 5) Rigorously grounded representations of human decision making behavior

In line with the objective of JOM, **all submissions must also be empirically informed** in a way that is indispensable to the research. Numerous possibilities for empirical contribution exist, including:

- a) Longitudinal empirical observation to rigorously test existing OM system dynamics models
- b) Behavioral models that capably account for variation in empirical observations over time
- c) Simulation analysis informed rigorously by solid empirical data collection

Studies that capture both dynamic functional complexity and realistic human decision making behavior are also welcome. These include both empirically informed compartment (difference/differential equation) models, individual-based (agent-based) models. Regardless of approach, strong arguments for use of a chosen methodology to investigate a given questions must also be given.

Paper submission

Papers submitted to the special issue should adhere to the submission guidelines for the Journal of Operations Management. <http://wpcarey.asu.edu/JOM/>

Deadline for Submissions

Please submit manuscripts to one of SI editors. The deadline for submissions is **December 30, 2013**.

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