

*The Hong Kong Polytechnic University  
Department of Logistics and Maritime Studies  
Research Seminar*

**An Empirical Investigation of Transaction Dynamics in Online Surplus Networks:  
A Complex Adaptive Systems Perspective**

by

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**Date: 4 January 2017 (Wednesday)  
Time: 2:30pm-3:30pm  
Venue: M106, Li Ka Shing Tower  
The Hong Kong Polytechnic University**

**(Conducted in English)**

**Abstract:**

Online Material and Waste Exchanges (OMWEs) provide an online platform that helps connect suppliers of surplus material with potential buyers. These exchanges aim to improve the environment by helping industrial organizations re-purpose their surplus material and avoid landfill disposal. OMWEs represent an emerging surplus-driven supply network, which exhibits different complexity and dynamics when compared to traditional supply networks. Research has not yet examined how the complex internal dynamics of the buyers and suppliers influences transactions in this type of supply network. Drawing on Complex Adaptive Systems (CAS) theory, this study investigates how the different levels (node, dyad, and network) of the network effects the likelihood of transaction between buyers and suppliers. We also show how buyers adapt their behaviors over time to increase the likelihood of a transaction. The data come from MNexchange.org. The analysis shows that at the node level buyers use different search strategies to find products, and over time they adapt these strategies to increase transaction success. At the dyadic level, buyers negotiate with suppliers for products, and over time selectively seek out assortative mixing to increase transaction success. Finally, at the network level, competition among the buyers reduces transaction success, unless the product has been on the market for a long time. The results show that buyers with more experience can more quickly identify products that will lead to transaction success when compared to competitors. Collectively the results demonstrate the multi-level dynamics of the network, which involves complex buyer-supplier interactions to resolve different types of uncertainty and how buyers adapt their behavior over time. More broadly, this study suggests that managers and policymakers of such online exchanges can better understand the complexity to increase the overall rates of transaction between buyers and suppliers, which should improve the environment.

**Bio:**

Kevin Linderman is the Curtis L. Carlson Professor in Supply Chain and Operations at the University of Minnesota's Carlson School of Management. He has a bachelors' degree in mathematics and philosophy from Minnesota State University, master degree in mathematics from Miami University, master degree in management science and PhD in operations from Case Western Reserve University. He has received two National Science Foundation grants to study quality management, knowledge management, and sustaining high performance. His research focus is in the area of process improvement and innovation, knowledge management, environmental operations, and managing complex systems. His research has been published in several leading journals including *Management Science*, *Journal of Operations Management*, and *Production and Operations Management* to name a few. He served as an elected officer of Operations Management Division of Academy of Management. Prof. Linderman received a number of scholarly awards including the 2016 *Operations Management Scholar Award* (Career Award - Academy of Management), 2016 *Associate Editor Award Decision Science Journal*, 2016 *Associate Editor Award Journal of Supply Chain Management*, 2015 *Carlson School of Management Research Award*, *Elected officer of Operations Management Division of Academy of Management*, 2011 *Carlson School of Management Research Award*, 2010 *Elwood S. Buffa Doctoral Dissertation Award* (Co-advisor), 2008 *Decision Science Journal Best Paper Award Finalist*, 2008 *Chan Hahn Best Distinguished Paper Award Finalist*, 2006 *Elwood S. Buffa Doctoral Dissertation Award* (Co-advisor), 2004 *Academy of Management Chan K. Hahn Distinguished Paper Award*, *Graduate Dean's Instructional Excellence Award*, *Dean's Award* (4.0/4.0 G.P.A. in coursework), *Omega Rho Honor Society*.

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**All are welcome!**