The Hong Kong University of Science and Technology

Dept of Information Systems, Business Statistics and Operations Management
Zoom Webinar Announcement

Traceability Technology Adoption in Supply Chain Networks
by
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Date	:	**23 November 2020 (Monday)**
Time	:	**9:00 - 10:30 pm**
Venue	:	**Online via Zoom**

Abstract: Modern traceability technologies promise to improve supply chain management by simplifying recall procedures, increasing demand visibility, or ascertaining sustainable supplier practices. Managers in the dozens of traceability initiatives developing such technologies face a difficult question: which companies should they target as early adopters to ensure that their technology is broadly employed? To answer this question, managers must consider an *extended supply chain effect* that is inherent to traceability technologies. Namely, the benefits obtained from traceability are conditional on technology adoption throughout a product's supply chain. This effect, together with the fact that supply chains are interlinked in complex networks, makes the problem of choosing early adopters complex and difficult to solve. Our first step in tackling the question of selecting the smallest set of early adopters is to introduce a new model of the dynamics of traceability technology adoption in supply chain networks. Similar to extant diffusion models, our model specifies new adopters based on past adopters. Unlike other models, however, it incorporates extended supply chain effects. We show that the problem of selecting the smallest seed set is NP-hard and that no approximation to within a polylogarithmic factor can be obtained for any polynomial-time algorithm. Nevertheless, we introduce a procedure that identifies an exact solution in polynomial time under certain assumptions about the network structure. We provide evidence that our procedure is tractable for real-world supply chain networks. Our results further provide insights into the relationship between network structures and the optimal set of firms to target. In particular, they suggest that small, isolated firms may be favored over large, highly connected ones.

Biography: Philippe Blaettchen is a fifth-year PhD Candidate in Technology & Operations Management at INSEAD. In his research, he aims to understand how new business models, enabled by emerging technological developments, can help answer pressing societal questions while allowing organizations to remain competitive. Philippe examines the impact of technological developments and surfacing societal issues at all layers of the business model, from the individual organization to entire supply chains. Prior to joining the Ph.D. Program at INSEAD, Philippe earned a B.Sc. in Industrial Engineering from Karlsruhe Institute of Technology (KIT) in Germany, as well as a M.Sc., also in Industrial Engineering, from KIT and Linköping University, Sweden (dual degree). While in Karlsruhe, Philippe consulted companies in the region as a member and managing director of student consultancy delta Karlsruhe GmbH.

All interested are welcome!
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