

Management Game of a Building Material Supply Chain

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Brief

The built environment is a complex and dynamic system. Building material supply chains form part of this complexity. They involve multiple actors and a constant flow of material and information between them. Supply chains are difficult to manage and known for their variability and uncertainty. This workshop addresses why this is the case and how we can better manage complex systems.

This system dynamics management game involves a supply chain with four companies and the respective material and information flows. Participants take the role of a company and decide – based on their current inventory situation and customer orders – how much to order from their suppliers. All companies have a common goal: Minimizing costs for capital in the supply chain by maintaining low stocks but managing to deliver all orders. The surprising results of the management game explain inefficiencies of supply chains and point to the difficulties of coordination.

Aim

This system dynamics management game of a building material supply chain will help understand system complexity. The game illustrates how a system's structure produces its behaviour. The players experience the pressure that emerges from other actors and from 'the system'. They will coordinate the decisions of different supply chain actors. As part of the role, participants will also experience decision-making and coordination problems such as the bullwhip effect.

This is a systems thinking exercise that will help explore specific problems in the coordination of supply chains, but it will particularly enhance participants' general systems thinking capabilities. In a debriefing directly after the actual game, players will be introduced to important concepts of systems thinking and causal loop diagrams.

Organisation of the workshop

Number of participants: 4–16

Duration: 3 hours

There is no specific prior knowledge required for participating in this workshop. Participants will be introduced to their roles in the management game as well as to the mechanics of making decisions. We will play multiple rounds so that participants will have the chance to experience the evolving dynamics. The session will include an analysis of the game and its results as well as a debriefing. Please bring a pencil or pen.