

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

5 Steps to Supply Chain Coordination

by

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The Hong Kong Polytechnic University

(Conducted in English)

Abstract:

There has accumulated a considerable literature on supply chain coordination over the last two decades. In single period cases, most papers carry out the following four steps: 1. Solve the given decentralized problem; 2. Solve the corresponding centralized problem; 3. Show that there is double marginalization and hence the need for coordination; 4. Obtain a contract to coordinate the supply chain. The coordinating contract is obtained by equating the follower's best response to the centralized channel's optimal decision. A missing step is to show that the coordinating contract so obtained is an equilibrium in the Stackelberg game under the contract. In this paper, we present this missing step (the 5th step) by showing that the coordinating contract obtained in the conventional way is indeed a Stackelberg equilibrium. We develop a general framework to obtain coordinating contracts and apply it to special cases, such as revenue-sharing contract, buy-back contract, quantity flexibility contract, and sales rebate contract. We conclude the paper by extending the 5-step approach to two-period supply chains where the equilibrium concept to be used is that of Feedback Stackelberg equilibrium.

Bio:

Suresh P. Sethi is Eugene McDermott Professor of Operations Management and Director of the Center for Intelligent Supply Networks at The University of Texas at Dallas. He has written 7 books and published nearly 400 research papers in the fields of manufacturing and operations management, finance and economics, marketing, and optimization theory. He teaches a course on optimal control theory/applications and organizes a seminar series on operations management topics. He initiated and developed the doctoral programs in operations management at both University of Texas at Dallas and University of Toronto. He serves on the editorial boards of several journals including Production and Operations Management and SIAM Journal on Control and Optimization. He was named a Fellow of The Royal Society of Canada in 1994. Two conferences were organized and two books edited in his honor in 2005-6. Other honors include: IEEE Fellow (2001), INFORMS Fellow (2003), AAAS Fellow (2003), POMS Fellow (2005), IITB Distinguished Alum (2008), SIAM Fellow (2009), POMS President (2012), INFORMS Fellows Selection Committee (2014-16), Alumni Achievement Award, Tepper School of Business, Carnegie Mellon University (2015).

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All are welcome!