



Operations Management Summer Camp 2011

Date: Friday, 3 June 2011

Venue: Singapore Management University
 Lee Kong Chian School of Business
 Level 1, Seminar Room 1.1

Programme	
8.45am- 9.00am	<p>Opening Speech by Professor Arnoud DE MEYER, President of Singapore Management University</p>
9.00am- 9.40am	<p>Paper I Presenter: Lieven DEMEESTER Discussant: Vinod SINGHAL Cross-functional Coordination Through Sales and Operations</p> <p>Purpose – The study's purpose is to gain insights about cross-functional coordination by analyzing the case of a Sales & Operations Planning (S&OP) implementation and comparing it with existing frameworks. Design/methodology/approach – The case study analyzes the design and pilot-implementation of S&OP at a South-East Asian site of a global producer of ingredients. The case data was collected over a period of six months, including four S&OP planning cycles, through interviews, email surveys and direct observation of meetings, meeting outputs and planning tools. Findings – As S&OP participants become more knowledgeable about other functions' capabilities they become more successful in negotiating with external partners. Also, the perceived fairness of decision making can contribute to the willingness of participants to engage and commit to S&OP. We further find that the engagement of product designers in S&OP can lead to better supply chain performance as they identify and approve alternative components or processes to ease supply constraints. Finally, we observe that an advanced organization structure and vigilance about forward momentum can help companies implement and sustain S&OP in challenging environments. Practical implications – Companies can find additional benefits from cross-functional coordination if they take advantage of organization structure, fairness in decision making and closely monitored forward momentum to sustain a process that also pursues improved dealings with external partners and better supply chain performance through flexibility in product design. Originality/value – We use case study research to derive five novel hypotheses</p>

<p>9.40am- 10.00am</p>	<p>regarding the content, structure and process of cross-functional coordination through S&OP.</p> <p>Discussion</p>
<p>10.00am- 10.15am</p>	<p>Tea Break</p>
<p>10.15 am- 10.55am</p>	<p>Paper II Presenter: Onur BOYABATLI Discussant: Brian T. TOMLIN Supply Management in Multi-Product Firms with Fixed Proportions Technology</p> <p>This paper provides insights on the optimal procurement decisions of a processor for sourcing a primary commodity input, where this input gives rise to two outputs in fixed proportions. The processor can source the input using two heterogeneous option contracts, signed in advance of the spot market, and from the spot market on the spot day; and faces a newsvendor problem in each of the output markets. Our analysis provides managerial insights on the impact of input spot price and output demand uncertainties. We show that the processor benefits from a higher demand correlation, a lower demand variability, and a higher input spot price variability. Our comparative statics results provide some rules of thumb for strategic supply management. We show that some of these insights critically depend on the contract structure and the spot procurement access of the processor. For example, with a higher demand correlation, the processor that has spot procurement access should decrease its contract volume with a forward contract, but may increase it with an option contract. In the absence of spot procurement, the optimal volume of forward contract is insensitive to demand correlation. We demonstrate that the optimal contracting decision from the two option contracts follows a greedy policy under deterministic demands: The contracts are ranked in decreasing order of an index, which we characterize in closed form, and the second contract is used only after the capacity of the first contract is exhausted. With stochastic demands, the greedy policy is optimal only under special conditions.</p> <p>Discussion</p>
<p>10.55am- 11.15am</p>	<p>Discussion</p>
<p>11.15am- 11.30am</p>	<p>Tea Break</p>
<p>11.30am- 12.10pm</p>	<p>Paper III Presenter: Yun Fong LIM Discussant: Melvyn SIM Sharing Work Dynamically on U-Lines with Special Skill Requirements</p> <p>We study a U-shaped line with a professional worker and an ordinary worker. Only the professional worker is trained to work on a critical segment of the line, while both workers can work on the rest of the line. Since the professional worker is more expensive, we want him to concentrate on the critical portion of work and dynamically share work with his colleague on other parts of the U-line without too much travel. We propose simple coordination rules to achieve this. Under these rules, we show that the system always converges to a fixed point or a period-2 orbit. For the three-station system, we fully analyze its dynamics and find closed-form expressions of the fixed point, the period-2 orbit, and the corresponding throughput. For the M-station system, we provide a sufficient condition for the fixed point to be a global attractor. We also develop algorithms to determine the fixed</p>

12.10pm- 12.30pm	<p>point and the corresponding throughput. We find that increasing the number of stations generally improves throughput for certain work-content distributions. However, further dividing the U-line into more stations has diminishing returns.</p> <p>Discussion</p>
12.30pm- 2.00pm	<p>Lunch Break</p>
2.00pm- 2.40pm	<p>Paper IV Presenter: Rong LI Discussant: Melvyn SIM Supply Chain Coordination in a Single-supplier, Multi-retailer Distribution System using Bi-directional Adjustment Contracts</p> <p>We study a two-period production and inventory distribution problem for a supply chain consisting of a single supplier and multiple retailers. The supplier produces in each period to fill the orders from the retailers. At the start of the second period, inventory can be re-distributed among the retailers. We characterize the optimal production and inventory distribution policy for the centralized system. We study a decentralized system, with order opportunities for each retailer in each period, and observe a source of incentive misalignment. To resolve this conflict, we introduce a bi-directional adjustment contract, which the supplier offers in the second period to facilitate inventory redistribution among the system. Under this contract, each retailer can either buy additional inventory from the supplier or sell back excess inventory to the supplier. When coordinating this decentralized system with adjustment contract, we identify two new factors which can cause incentive misalignment, beyond the well-known double marginalization. We show that these factors can be resolved via coordinating state-dependent adjustment contract prices, along with a wholesale price menu. Indeed, through the specification of the coordinating wholesale price menu for the retailers, the supplier can allocate the maximum system profit arbitrarily among all parties in the system.</p>
2.40pm- 3.00pm	<p>Discussion</p>
3.00pm- 3.15pm	<p>Tea Break</p>
3.15pm- 3.55pm	<p>Paper V Presenter: Zhengping WU Discussant: Brian T. TOMLIN Distribution Channel Structure for Chain-to-Chain Competition with Price and Lead-Time Sensitive Demand</p> <p>This paper studies distribution channel structure strategies for two competing manufacturers that sell substitutable products with price and lead-time sensitive demand. The manufacturers can either choose a centralized distribution structure in which they sell directly to the demand, or a decentralized one in which they sell through an independent retailer. Given that each supply chain can be either centralized or decentralized, altogether we consider three possible channel structure combinations in the chain-to-chain competition. For each channel structure combination we obtain the optimal decisions on price and lead-time quotations offered to the customers as well as the total profits for the two supply chains. We then investigate the equilibrium combination and find that centralization (decentralization) always associates with itself a price (lead-time) advantage and a lead-time (price) disadvantage. In addition to the well-known price competition effect that has been studied in the literature, we make new discoveries on the effect of lead-time competition on channel structure. Contrary to price competition,</p>

3.55pm- 4.15pm	<p>lead-time competition tends to favor centralization over decentralization. Finally, our analysis shows that when either price competition or lead-time competition dominates the other, the equilibrium calls for the two supply chains to be either both centralized or both decentralized. Furthermore, it is Pareto optimal for both chains to adopt centralized distribution in a lead-time competition dominant market; and in a price-competition dominant market, both chains being decentralized is the Pareto optimum.</p> <p>Discussion</p>
4.15pm- 4.30pm	<p>Tea Break</p>
4.30pm- 5.10pm	<p>Paper VI Presenter: Pascale CRAMA Discussant: Vinod SINGHAL Licensing of University Science: Tacitness and the Impact of Invention and Governance Capability on Contract Type1</p> <p>We study a research site wherein technology and governance capabilities are loosely coupled. This allows us to examine the main effect of governance capability on contract structure. Furthermore, we focus on the tacitness of the invention to argue that it not only predicts contract structure but also moderates the relationships between invention or governance capability and contract structure. We test our predictions using decisions on the choice of fixed versus performance contracts to license 1,049 technologies from a large university. The results illustrate conditions under which, at the same level of invention or governance capability, inventions are commercialized through different contractual structures.</p>
5.10pm- 5.30pm	<p>Discussion</p>
	<p>Session Ends</p>

Discussants' Profile:

Brian T. TOMLIN is an Associate Professor of Business Administration at the Tuck School of Business at Dartmouth. His research explores operations strategy and supply chain management, with an emphasis on supply chain design and risk management. He is an associate editor of many leading journals, including Management Science. Brian teaches the core operations management class. Brian received his PhD from MIT's Sloan School of Management, where he was awarded the Zannetos PhD Dissertation Prize. His undergraduate degree is from University College Dublin in Ireland. Prior to becoming an academic Brian worked full time for a number of companies, including General Electric and the Boston Consulting Group.

Melvyn SIM is an associate professor in the Department of Decisions Sciences, NUS Business school. He holds the Dean's chair and is the deputy head of the department. He earned his PhD in Operations Research from MIT, 2004. Dr. Sim's research interests fall broadly under the categories of decision making and optimization under uncertainty with applications ranging from finance, supply chain management to engineered systems. He is one of the active proponents of Robust Optimization and has given invited talks in this field at international conferences. Dr. Sim won second places in the 2002 and 2004 George Nicholson best student paper competition and emerged first place in the 2007 Junior Faculty Interest Group (JFIG) best paper competition. He is also the recipient of the 2009 NUS outstanding young researcher award. Dr. Sim serves as an associate editor for Management Science, IIE Transactions and Mathematical Programming Computations.

Vinod SINGHAL is the Dr. Alfred F. and Patricia L. Knoll Professor of Operations Management at the College of Management at Georgia Institute of Technology. He is the Associate Dean of MBA programs, Area Coordinator of Operations Management, and the Associate Director for the Center for Paper Business and Industry Studies, an industry center funded by the Sloan Foundation. Prior to joining Georgia Tech in 1989, he worked for three years as a Senior Research Scientist at General Motors Research Labs. Vinod's teaching interests include operations strategy, total quality management, supply chain management, management science, and decision analysis. His research has focused on the impact of operating decisions on accounting and stock market based performance measures. His research has been supported through grants from the US Department of Labor, National Science Foundation, the American Society of Quality, and the Sloan Foundation. He has published extensively in academic and practitioner publications and presented his research at many practitioner conferences and universities. His research has been extensively cited in the media including *Business Week*, *The Economist*, *Fortune*, *Smart Money*, *CFO Europe*, *Financial Times* and *Daily Telegraph*. Vinod is a departmental editor of *Production and Operations Management*, Associate Editor of *Management Science* and *Manufacturing and Service Operations Management*, and member of the editorial boards of *IEEE Transactions*, and *Quality Management Journal*. He has served on the Board of Examiners of the Georgia Oglethorpe Award, Bell South's President Quality Award, and the Baldrige Board of Examiners.