

The Hong Kong University of Science and Technology
Department of Information Systems,
Business Statistics and Operations Management

Seminar Announcement

*Implementing and Evaluating a New Inventory Distribution
Control System for Zara*

by

*Professor Jérémie Gallien
Sloan School of Management
Massachusetts Institute of Technology*

Date: 19 January 2009 (Monday)

Time: 11:00 am – 12:30 pm

Venue: Room 4379, ISOM Conference Room (L17/18)

~~~~~ All interested are welcome ~~~~~

**Abstract**

Working in collaboration with Spain-based retailer Zara, we address the problem of distributing, over time, a limited amount of inventory across all the stores in a fast-fashion retail network. Challenges specific to that environment include very short product life-cycles, and store policies whereby an article is removed from display whenever one of its key sizes stocks out. To solve this problem we first formulate and analyze a stochastic model predicting the sales of an article in a single store during a replenishment period as a function of demand forecasts, the inventory of each size initially available and the store inventory management policy just stated. We then formulate a mixed-integer program embedding a piece-wise linear approximation of the first model applied to every store in the network, allowing us to compute store shipment quantities maximizing overall predicted sales, subject to inventory availability and other constraints. We report the implementation of this optimization model by Zara to support its inventory distribution process, and the ensuing controlled pilot experiment performed to assess the model's impact relative to the prior procedure used to determine weekly shipment quantities. The results of that experiment suggest that the new allocation process increases sales by 3 to 4%, which is equivalent to \$275M in additional revenues for 2007, reduces transshipments, and increases the proportion of time that Zara's products spend on display within their life-cycle. Zara is currently using this process for all of its products worldwide. (joint work with Felipe Caro, UCLA Anderson School of Management).

**Biography**

Jérémie Gallien is an Associate Professor in the Operations Management Group at the MIT Sloan School of Management and is also affiliated with the MIT Operations Research Center, the MIT Leaders For Manufacturing program and the Singapore - MIT Alliance. His research involves the development, implementation and evaluation of mathematical optimization models for the real-time control of physical flows and trading interfaces in supply chains. Dr. Gallien teaches a variety of classes in Sloan's MBA, LFM and Ph.D programs, including Operations Management, System Optimization, Simulation, and several research seminars. He holds a Ph.D in Operations Research from MIT and an Eng.D in Industrial Engineering and Applied Mathematics from the Ecole des Mines de Paris.