

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

Seminar Announcement

*An Algorithm and Demand Estimation Procedure for Retail
Assortment Optimization*

by

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Date: 10 February 2009 (Tuesday)

Time: 2:00 pm – 3:30 pm

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

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

Abstract

We consider the problem of choosing, from a set of  $N$  potential SKUs in a retail category,  $K$  SKUs to be carried at each store so as to maximize sales or a defined profit function. Assortments can vary by store, subject to a maximum number of different assortments. We describe an approach in which we view a SKU as a set of attribute values, use sales history of the SKUs currently carried by the retailer to estimate the demand for attribute values and from this, the demand for any potential SKU, including those not currently carried by the retailer. We also introduce a model of substitution behavior, estimate the parameters of this model and consider the impact of substitution in choosing assortments. We use maximum likelihood estimation to fit the parameters of our model and describe several alternative heuristics for choosing SKUs. We describe application of this approach to optimize assortments for two real examples, snack foods and tires, which produced sales lifts of 41% and 36% respectively.

Biography

Ramnath Vaidyanathan is a doctoral candidate in the Operations and Information Management (OPIM) department at the Wharton School, University of Pennsylvania. His research interests span retail operations, revenue management and empirical operations management. In his dissertation, he focuses on demand forecasting and assortment planning issues in product retailing and pricing/revenue management issues in ticket retailing.

Prior to joining Wharton, he worked as a consultant with McKinsey & Company in India where he analyzed business issues and developed and implemented recommendations for leading companies on a variety of strategic, operational and organizational challenges. He graduated with highest institute honors in Mechanical Engineering from the Indian Institute of Technology Madras.