

NYU Stern School of Business
Department of Information, Operations & Management Sciences
OPERATIONS MANAGEMENT RESEARCH SEMINAR

TOPIC: Self-Selecting Priority Queues with Burr Distributed Waiting Costs

SPEAKER: Nagesh Gavirneni (Cornell)

DATE: Wednesday, September 24, 2014

TIME: 9:30 AM - 10:30 AM

PLACE: KMC 4-80

ABSTRACT

Service providers, in the presence of congestion and heterogeneity of customer waiting costs, often introduce a fee-based premier option using which the customers self-segment themselves. Examples of this practice are found in health care (concierge medicine), amusement parks, government (consular services), and transportation. Using a single-server queuing system with customer waiting costs modeled as a Burr Distribution, we perform a detailed analysis to (i) determine the conditions (fees, cost structure, etc.) under which this strategy is profitable for the service provider, (ii) quantify benefits accrued by the premier customers; and (iii) evaluate the resulting impact on the other customers. We show that such self-selecting priority systems can be pareto-improving in the sense that they are beneficial to everyone. These benefits are larger when the variance in the customer waiting costs is high and the system utilization is high. We complement these results with data on the adoption of MDVIP (the most popular concierge medical service in the US) and show that the areas where it was adopted have higher median incomes and older population and thus are amenable to higher revenues for the service provider. Numerical results indicate that planning for a 30% enrollment in the high-priority option is robust in ensuring that all the stakeholders benefit from the proposed strategy.

BIO

Srinagesh Gavirneni is an associate professor of operations management in the S.C. Johnson Graduate School of Management at Cornell University. For the 2011-12 academic year, he was a visiting associate professor in the Nanyang Business School. His research interests are in the areas of supply chain management, inventory control, production scheduling, simulation, and optimization. His papers have appeared in *Management Science*, *Manufacturing & Service Operations Management*, *Operations Research*, *Production and Operations Management*, *European Journal of Operational Research*, *Operations Research Letters*, *IIE Transactions*, and *Interfaces*. Previously, he was an assistant professor in the Kelley School of Business at Indiana University, the chief algorithm design engineer of SmartOps, a software architect at Maxager Technology Inc., and a research scientist with Schlumberger. His undergraduate degree from IIT-Madras is in mechanical engineering, and he has received an M.Sc. from Iowa State University and a Ph.D. from Carnegie Mellon University.