

Kalyan T. Talluri

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Research Interests

Business analytics; Revenue Management; Network and Service Design; Workforce Analytics; Transportation and logistics; Airline operations

Education

Massachusetts Institute of Technology, Cambridge, MA

Ph.D. in Operations Research, 1991

Thesis Title: Issues in the Design and Analysis of Survivable Networks

1991 *George E. Nicholson Student Paper Competition of ORSA : Second Prize.*

1992 *Zenon and Clotilde Zannetos Ph.D. Thesis Prize of M.I.T.*

Purdue University, West Lafayette, IN

MS in Industrial Engineering, 1987

Osmania University, Hyderabad, India

BE in Mechanical Engineering, 1985

Work Experience

2014-present **Imperial College Business School**, London, U.K

Professor of Operations Management

Director, MSc in Business Analytics (on-campus and part-time)

Fellow, Center for Business Analytics

Fellow, Gandhi Center for Inclusive Innovation

Indian School of Business, Hyderabad, India: Visiting Professor, 2010- ; MBA Class on Dynamic Pricing and Revenue Management

BML Munjal University, Manesar, India: Visiting Professor. 2015-2018

London Business School, Phd class on Revenue Management (2016)

1995-2014 **Universitat Pompeu Fabra**, Department of Economics and Business, Barcelona, Spain

ICREA Research Professor (2006-2014, currently on leave)

Full Professor (2006)

Director, MSc in Management (2000-2003, 2005-2010)

Associate Professor with Tenure (1998)

IESE Business School, Barcelona, Spain: MBA Class on Dynamic Pricing and Revenue Management 2003, 2004.

INSEAD Business School, Fontainebleau, France: Visiting Professor; 2003-2004

Tuck School of Business, Dartmouth College, N. H, USA: Visiting Professor, March 2012. MBA Class on Dynamic Pricing and Revenue Management

LUISS Guido Carli, Dept of Economics, Rome, Italy: Visiting Professor, 2013

Stern School of Business, NYU, N. Y, USA: Visiting Professor, March-April 2013. MBA Class on Dynamic Pricing and Revenue Management

Universitat Augsburg Germany: Phd Class on Dynamic Programming 2014.

St. Petersburg State University of Economics, Russia: Visiting Scientist. 2013-2014

1992-1995 **USAir, Inc.**, OR Department, Arlington, VA (now renamed USAirways)

Senior Operations Research Analyst

Development work on the Corporate Scheduling Project. Was in charge of the Optimization group in Revenue Management

1991-1992 **Northwestern University**, Kellogg Graduate School of Management, Evanston, IL
Visiting Assistant Professor
Courses Taught: M.B.A core courses on Operations Management

1987-1991 **MIT**, Sloan School of Management and Department of Electrical Engineering and Computer Science, Cambridge, MA
Teaching Assistant/Research Assistant
Nonlinear Programming, Mathematical Programming, Applied Statistics, Dynamic Programming and Stochastic Control, Queuing Theory, Network Design

1989 (Summer) **Roadnet Technologies, UPS**, Baltimore, MD
Summer Intern
Designed and implemented algorithms for vehicle routing and scheduling of UPS trucks

1989 (January) **Arthur D. Little, Inc.**, Boston, MA
Operations Research Analyst
Statistical analysis of logistics operations for an abrasive manufacturing company

1985-1987 **Purdue University**, West Lafayette, IN
Teaching Assistant

Patents

One U.S patent awarded for O&D Revenue Management controls (US Patent Number 6263315).

Industry Consulting

Aer Lingus, Dublin, Ireland (*pricing*)
Iberia Airlines, Madrid, Spain (*pricing and revenue management*)
Delta Airlines, Atlanta, Georgia, USA (*simulations*)
Lufthansa Systems, Berlin, Germany (*simulations*)
Shangri-La Hotels, Hong Kong (*market segmentation and analysis*)
PROS Strategic Solutions, Houston, TX, USA (*network revenue optimization*)
Avis Europe, England (*network design, segmentation*)
ChangeYourFlight.com/caravelo (*Overbooking marketplace, tariff design*)
innRoad Inc. (*Hotel SaaS PMS, RM system design and development*)
XXX1 (*Garden products chain, Inventory optimization*)
XXX2 (*Professional Services, Resource Optimization*)
Turkish Airlines (*RM Training*)
Edwardian Hotels (*RM Training*)
XXX3 (*Marketing analytics*)
Dunnhumby (*pricing optimization*)
BCG Gamma (*fashion assortment forecasting, analytics and optimization*)

Executive Education

Service Design, Revenue Management, Digital Analytics, Operational Excellence

Research Manuscripts

Book

"The Theory and Practice of Revenue Management." (with G. van Ryzin). 752 pages. *Springer* (June 2004).
(Winner INFORMS 2005 Lanchester Prize)

Published or Accepted for Publication

1. "2-Change for k -Connected Networks" (with M. X. Goemans). *OR Letters*, March (1991).
2. "On the k -Cut Subgraph Polytope" (with D. K. Wagner). *Mathematical Programming*, 67, 121-132 (1994).
3. "Minimum-Cost Packing of Node-Disjoint Steiner Trees in Series-Parallel Networks" (with S. Chopra). *VLSI Design*, Vol. 4, No. 1, 53-57 (1996).
4. "Network Design with Few Edges". *Networks*, Vol. 27, 109-115 (1996).
5. "Swapping Applications in a Daily Airline Fleet Assignment". *Transportation Science*, Vol. 30, August (1996).
6. "Airline Operations Research" (with C. Barnhart). *Civil and Environmental Engineering Systems* (eds. Charles ReVille & Arthur McGarity), John Wiley & Sons (1997).
7. "The Aircraft Maintenance Routing Problem" (with R. Gopalan). *Operations Research* Vol. 46, No. 2, March-April (1998).
8. "Airline Revenue Management with Passenger Routing Control: A New Model with Solution Approaches". *International Journal of Services Technology Management* Vol 2., No. 1, Jan (2001).
9. "Mathematical Models in Airline Schedule Planning: A Survey" (with R. Gopalan). *Annals of Operations Research* (1998).
10. "The Four-Day Aircraft Maintenance Routing Problem". *Transportation Science* (1998).
11. "An Analysis of Bid-Price Controls for Network Revenue Management" (with G. van Ryzin). *Management Science*, November, (1998).
12. "A Randomized Linear Programming Algorithm for Network Revenue Management" (with G. van Ryzin). *Transportation Science*, (1999).
13. "Revenue Management". Book Chapter (with G. van Ryzin). *Handbook of Transportation* (ed. Randolph Hall). Kluwer Academic Publishers (Jan 2003).
14. "Revenue Management under a General Discrete Choice Model of Consumer Behavior." (With G. van Ryzin). *Management Science*, (Jan 2004).
15. "An Introduction to Revenue Management." (With G. van Ryzin). *Tutorials in Operations Research*, INFORMS, (2005).
16. "Revenue Management: Models and Methods." (with Karaesmen, I., G. van Ryzin and G. Vulcano). *Proceedings of of the 2008 Winter Simulation Conference*, S.J.Mason, R.R.Hill, L.Moench and O.Rose (eds) IEEE (2008).

17. "Revenue Management." Chapter in the *Oxford Handbook of Pricing and Revenue Management*. (eds. Robert Phillips, Ozalp Ozer) (2013).
18. "The Customer Valuations Game as a Basis for Teaching Revenue Management". Special Issue on Teaching Revenue Management, *INFORMS Transactions on Education*, Vol. 9, No. 3 (2009).
19. "Proving the performance of a new revenue management system", (with Fernando Castejon, Begoña Codina and Juan Magaz). Vol 9, 300-312, *Journal of Pricing and Revenue Management* (2010).
20. "Dynamic pricing competition with fixed capacities". (V. Martínez-de-Albèñiz), *Management Science* (June, 2011).
21. "Network revenue management with product-specific no-shows" (with S. Kunnumkal and H. Topaloglu). *Transportation Science* (2012).
22. "An enhanced concave program relaxation for choice network revenue management". (with J. Meissner and A. Strauss). *Production and Operations Management*, 22, 1 (2013).
23. "New formulations for choice network revenue management". *Inform Journal on Computing* 26, 2 (2014).
24. "Equivalence of piecewise-linear approximation and Lagrangian relaxation for network revenue management" (with S. Kunnumkal), *Mathematics of Operations Research* (to appear 2015).
25. "A note on relaxations of the choice network revenue management dynamic program" (with S. Kunnumkal), *Operations Research* (2016).
26. "Tractable consideration structures for network revenue management" (with A. Strauss), *Production and Operations Management* (2017).
27. "Choice network revenue management based on new tractable approximations (with S. Kunnumkal), To appear, *Transportation Science* (2018).
28. "A strong Lagrangian relaxation for general discrete-choice network revenue management (with S. Kunnumkal), *Computational Optimizaiton and Applications*. (2019).

Working Papers/Under Review

29. "Equilibria in Duopolies with Finite Strategy Spaces." (2003).
30. "On bounds for network revenue management." UPF Working paper.
31. "A risk-ratio procedure for the joint estimation of population size and parameters of a multinomial-logit model with unobservable no-purchases". (2009) UPF Working Paper.
32. "Approximate dynamic programming on CUDA for internet display advertising" (with S. Kunnumkal), Working paper.

33. "Managing algorithm-assisted drivers" (joint with Dmitrii Tikhonenko, Mihalis Markakis) *submitted*
34. "Mandatory merging policies" (joint with Dmitrii Tikhonenko, Gregori Friedman)
35. "Revenue management of a professional-services firm" (joint with Angelos Tsoukalas)
36. "Reviews, Biases and Six-sigma" (joint with Ningyuan Chen, Anran Li) *submitted*
37. "Retail facility-location based on public data" (joint with Muge Tekin) *submitted*
38. "The endogeneity of optimization and the risk-ratio method" (joint with Anran Li)
39. Pricing Optimization (joint with Clint Ho, Wolfram Wiesemann)
40. Optimal targeting for subscription products (joint with Clint Ho, Wolfram Wiesemann, Sven Mikolon)

Professional Service

Department Editor, Revenue Management and Marketplace Analytics (2018-) -- *Management Science*
 Senior Editor (2015-) -- *Production and Operations Management*
 INFORMS Revenue Management and Pricing Section (2016--) *Board Member*
 Associate Editor (2007-2014) – *Manufacturing and Service Operations Management*
 Associate Editor (2004-2007) – *International Journal of Pricing and Revenue Management*
Organizer: 2005 INFORMS RM and Pricing Conference, Barcelona
Program Committee: 2012 INFORMS Beijing
Scientific Program Committee: EuroMa 2015, Neuchatel, Switzerland
Scientific Program Committee: INFORMS TSL Workshop 2015, Berlin

Awards

1991 George E. Nicholson Student Paper Competition of ORSA : Second Prize.
 1992 Zenon and Clotilde Zannetos Ph.D. Thesis Prize of M.I.T.
 2004 INFORMS RM and Pricing Section award (co-winner with G. van Ryzin).
 2005 INFORMS Lanchester prize (co-winner with G. van Ryzin)
 2016 INFORMS Impact Prize (co-recipient) for widespread impact in the practice of Operations Research

Presentations and Conferences

Invited speaker at various IATA, INFORMS, AGIFORS and conferences, Universities and Industry.

Software

- Co-developer of the RevMaxx Bid-Price Optimization Engine for O&D Revenue Management (~25,000 lines of C/C++ code).
- Developer of the O&D Revenue Management Simulation software (~20,000 lines of code C/C++)

- ATPCO Airline Rules Footnotes and Fares Interpretation and Classification module for a software company (~100,000 lines of C code; in-memory database)
- iPiso real-estate listing web site– complete development of web and backend software, webmaster work. (SQL Server, VB, ASP/HTML on IIS)
- Pricing Analysis and Optimization Decision Support for a large European carrier. Developed model and prototype software (C/C++, postgresql, .NET)
- Network Optimization Model and Software for a car rental company. Complete development of model and software for an optimal network and to rebalance fleet. (C/C++, Access, Mappoint, VB, .NET)
- Hotel Revenue Management System – designed and implemented a complete hotel revenue management system for a hotel consulting firm (C/C++, PostgreSQL, .NET)
- Design of an online secondary auction market place (C/C++, PostgreSQL, .NET)
- Real time Hotel Revenue Management System – design, development of a production RMS engine for a hotel SaaS-model PMS (C/C++, PostgreSQL, .NET)

Ph.D Student Supervision

- Muge Tekin (UPF, graduated 2018)
- Dmitrii Tikhonenko (UPF, expected 2020)

Research Grants

- Spanish Govt. Grant for project titled "Dynamic pricing for autonomous systems" (2014-; Principal Investigator)
- Spanish Govt. Grant for project titled "Supply Chain Management" (2006-2012)
- Spanish Govt. Grant for project titled "Modelos de optimización para la asignación de recursos en sistemas productivos y logísticos" (2000-2003)
- Spanish Govt. Grant for project titled "Management of Public Enterprises" (1996-99)
- Spanish Govt. Grant for project titled "Optimization and Logistics" (1998-1999)