

Title: Strawberry Or Vanilla This Week? How To Optimize Tailored Assortments For Variety-Seeking/Avoiding Consumers

Speaker: Sumit M Kunnumkal, Indian School of Business, Hyderabad

Area: DS

Date: 22.11.2023, Venue: P11 @ 2.30PM

Abstract:

We consider the problem of a retailer personalizing an assortment to a consumer who is variety-seeking or variety-avoiding, that is, less or more likely to buy the same product as in the previous period. To capture the consumer's attitude towards variety, we construct a model based on that of Givon (1984) and later modified by Feinberg et al. (1994). We first consider the single period problem where the retailer has to determine the optimal assortment to a consumer based on her previous purchase and her attitude towards variety. Although the assortment optimization problem is intractable in general, we identify special cases where the optimal assortment can be determined efficiently. Moreover, we characterize the structure of the optimal assortment and compare it to the case where the consumer is variety neutral and makes choices according to the multinomial logit model. After that we consider the multi-period setting where the retailer makes tailored assortment decisions to a consumer who makes repeated purchases over time. We formulate the problem as a dynamic program and show that many of the structural properties from the single-period problem carry over to the multi-period case. We observe that the retailer can lose substantial revenues if the consumer's attitude towards variety is not considered while making the assortment decision. This is joint work with Dorothee Hohon (UTD), Ismail Kirci (UIUC) and Sridhar Seshadri (UIUC).

Speaker Profile:



Sumit Kunnumkal is a Professor of Operations Management at the Indian School of Business. He holds a Ph.D. in Operations Research from Cornell University. He received his M.S. in Transportation from the Massachusetts Institute of Technology and his B.Tech. in Civil Engineering from the Indian Institute of Technology, Madras. He has previously taught at the Smith School of Business, Queen's University and has held visiting positions at the Singapore University of Technology and Design and Universitat Pompeu Fabra. His research interests lie in the areas of pricing and revenue management, retail operations, assortment planning and approximate dynamic programming. He has taught in the Post Graduate Program, the Fellow Program and various advanced management and executive education programs at ISB.

Webpage: <https://sites.google.com/view/sumitmkunnumkal/home?authuser=0>