

Supply Chain & Operations Management Seminar



Dr. Ramandeep Randhawa

**Professor of Data Sciences and Operations
Marshall School of Business, University of Southern
California**

Why Perfect Tests May Not Be Worth Waiting For: Information as a Commodity

Friday, October 29, 2021 | 11:00—12:30 pm

Bio

Ramandeep Singh Randhawa is a Professor of Data Sciences and Operations at the University of Southern California's Marshall School of Business. His main research interests lie in revenue management, stochastic modeling, and machine learning, and he has numerous publications on these topics in the leading journals. He also currently serves on the editorial boards of Management Science and Operations Research. At the Marshall School of Business, he is currently the Vice Dean for Undergraduate Programs, and has previously served as the Department Chair of the department of Data Sciences and Operations. He is also the co-founder of PathomIQ Inc., an AI start-up focused on personalization of medicine and drug development. He holds a PhD from Stanford University and a B.Tech in Manufacturing Science and Engineering from IIT Delhi, where he was also recipient of the President's Gold Medal.

Abstract

Information products provide agents with additional information that is used to update their actions. In many situations, access to such products can be quite limited. For instance, in epidemics, there tends to be a limited supply of medical testing kits or tests. These tests are information products because their output of a positive or a negative answer informs individuals and authorities on the underlying state and the appropriate course of action. In this paper, using an analytical model, we show how the accuracy of a test in detecting the underlying state affects the demand for the information product differentially across heterogeneous agents.

Correspondingly, the test accuracy can serve as a rationing device to ensure that the limited supply of information products is appropriately allocated to the heterogeneous agents. When test availability is low and the social planner is unable to allocate tests in a targeted manner to the agents, we find that moderately good tests can outperform perfect tests in terms of social outcome. On the policy side, we use a numerical study of an evolving epidemic to confirm our theoretically derived insight that in the early stages of an epidemic with low test availability, releasing a moderately good test can be an optimal strategy.