

The Hong Kong University of Science and Technology
Dept of Information Systems, Business Statistics and Operations Management
OM Seminar Announcement



Multichannel Advertising: Budget Allocation in the Presence of Spillover and Carryover Effects

by
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Date : **15 Sep 2023 (Friday)**
Time : **10:30 – 11:30 AM**
Venue : **Room 6045, LSK Business Building**



Abstract: This paper explores budget allocation strategies for a multichannel ad campaign, where a marketing agency strives to maximize the total conversions by dynamically adjusting budget allocation over marketing channels. A salient feature of the problem is the interplay of spillover and carryover effects; namely, customers are exposed to ads through multiple channels, thus ads from one channel affect the effectiveness of the subsequent ads from other channels. We construct a simple model that captures the essential features of this problem. From a theoretical standpoint, our analysis yields two main insights. First, motivated by common practice based on the last-click attribution method, we examine a class of budget allocation policies that are oblivious to the spillover and carryover effects. If the agency decreases the budget on a channel based on past low conversions, while neglecting to account for the fact that the ads from that channel induced conversions through other channels, then the conversions from that channel will decrease. Consequently, the agency will further decrease the budget on the channel. This pattern repeats, eventually leading to suboptimal performance in the long run. Second, we derive a fluid approximation to consumer dynamics across multiple channels, which lends itself to characterizing structural properties of optimal dynamic budget allocation policies that internalize the cross-channel interactions. To enable practical implementation, we propose a fixed budget allocation policy that is both tractable in practice and near-optimal for long campaigns. We illustrate these insights through an empirical study based on data from an online multichannel ad campaign.

Bio: Huijun Chen is a Ph.D. candidate in Operations Management at the Business School of Hong Kong University of Science and Technology. Her academic advisors are Professor Ying-Ju Chen and Professor Dongwook Shin. She holds a master's degree from Columbia University in the City of New York and a bachelor's degree from Fudan University. She employs optimal control techniques and a range of empirical methods, including causal inference and structural models. On the substantive side, she is particularly interested in retailing and online advertising markets. Many of her present projects entail utilizing data to examine the decision-making processes of consumers and firms within these fields.

All interested are welcome!
Enquiries: Dept of ISOM