

## Investigating cross-site relationship dynamics on the path to purchase

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### Abstract

Consumers' online decision journey involves many touches as they search for, consider, and evaluate competitive offers before they make a purchase. In this journey, they may visit many websites which be viewed as competitor websites which may reduce the chances of the consumers visiting and/or converting at a focal firm's website or increase those probabilities if those websites are complementary. In this study, we propose a general framework to model online customers' website visits and conversions considering the cross-site relationship dynamics. The proposed model integrates the point process model for website visits and the multinomial choice model for conversions given website visits. We develop a dynamically- and mutually- exciting marked point process model which extends the extant research in this area.

Empirically, we apply the proposed model to individual-level online clickstream data which also contains individual history of website visit and conversion for hotel booking. We investigate the relationship between hotel chains and online travel agencies (OTAs) in the online hospitality context. Not only are the relationships between OTAs and hotel chains very unique, the relationship may change over time along the path to purchase. Overlooking the dynamic relationship between hotel chains and OTAs may bias managerial metrics and lead to suboptimal managerial decisions such as mispricing the commission fee. In our analysis, we find the strong evidence of the cross-relationship among the hotel chains and OTAs, and that our model predicts website visits and conversion better than existing models. We find that ignoring the dynamic mutually-exciting effect leads to biased carryover and spillover effects between the websites. We also highlight the implications for display advertisements along the path to purchase to maximize impact for a focal firm.

**Key words:** mutually exciting marked point process, cross-relationship dynamics, hotel booking, online travel agency, path to purchase, online customer journey

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