

MARKETING COLLOQUIA

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BIG DATA AND MARKETING ANALYTICS IN GAMING: COMBINING EMPIRICAL MODELS AND FIELD EXPERIMENTATION

ABSTRACT: This paper reports on the development and implementation of a large-scale, marketing analytics framework for improving the segmentation, targeting and optimization of a consumer-facing firm's marketing activities. The framework leverages detailed transaction data of the type increasingly becoming available in such industries. The models are customized to facilitate casino operations and implemented at the MGM Resorts International's group of companies. The core of the framework consists of empirical models of consumer casino visitation and play behavior and its relationship to targeted marketing effort. Important aspects of the models include incorporation of rich dimensions of heterogeneity in consumer response, accommodation of state-dependence in consumer behavior, as well as controls for the endogeneity of targeted marketing in inference, all issues that are salient in modern empirical marketing research. The paper discusses details of the models as well as practical issues involved in translating econometric models of this sort into implementable solutions in the field. A novel aspect of the paper is an analysis of a randomized trial implemented at the firm involving about 2M consumers comparing the performance of the proposed marketing-science based models to the existing status quo. We find the impact of the solution is to produce about \$1M to \$5M incremental profits per campaign, and about an 8% improvement in the Return on Investment of marketing dollars. At current levels of marketing spending, this translates to between \$10M and \$15M in incremental annual profit in this setting. More generally, we believe the results showcase the value of combining large, disaggregate, individual-level datasets with marketing analytics solutions for improving outcomes for firms in real-world settings. We hope our demonstrated improvement from analytics adoption help accelerate faster diffusion of marketing science into practice.