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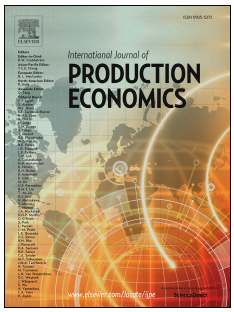

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Estimating Demand Variability and Capacity Costs due to Social Network Influence: The Hidden Cost of Connection.

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Abstract

Widespread access to social networks has led to renewed interest in social network influence in competitive markets. Digital connections enable customers to choose products based not only on intrinsic preferences, but also on inner-circle signals and market share data. However, these influences may significantly increase variability and complexity in demand forecasting. We propose an analytical model to estimate demand based on these three factors of choice. We focus on extreme weights of each factor where the probability distribution is more easily described. Then, we build solution paths as weights depart from the extreme points. We show that beta-binomial distributions can better describe the probability distribution of demand, and provide the parameters of that distribution, for new products helping operations and supply chain managers to take into account risk when making strategic decisions. To the best of our knowledge, we propose the first model that incorporates those three factors of choice in demand forecast. We also explore extreme cases where choice is mostly determined by intrinsic preference rather than social influence, and vice versa.

Keywords: demand; networks; social network; capacity forecast

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