Integrated Advertising and Supply Chain Plans for an Innovative Product under Uncertainty

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***Abstract*— Demand for an innovative product typically follows a diffusion process. Prior advertising research on the innovative new product assumes an infinite capacity and a deterministic demand situation. However, capacity constraints are common for the new products. Also, the demand for the new product is extremely difficult to predict before its launch. Nonetheless, a firm that deals with the new product mostly has to take initial advertising and production planning decisions under an uncertain demand and capacity constrained situation. After observing the initial demand, the firm generally adjusts its marketing and production plans as per the demand realized. In this paper, we suggest the use of a two stage stochastic programming with recourse to analyze this situation. Our results show how the operational characteristics such as inventory holding and back order costs can significantly influence the advertising under different diffusion patterns.**

***Index Terms*— supply chain management for new products under uncertainty, innovation diffusion process, advertising and pricing models.**

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