RETAIL STORE STOCK INVENTORY ANALYSIS

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1. Optimal inventory management for a retail chain with diverse store demands

NarendraAgrawal, Stephen A.Smith

Item demands at individual retail stores in a chain often differ significantly, due to local economic conditions, cultural and demographic differences and variations in store format. Accounting for these variations appropriately in inventory management can significantly improve retailers' profits. For example, it is shown that having greater differences across the mean store demands leads to a higher expected profit, for a given inventory and total mean demand. If more than one inventory shipment per season is possible, the analysis becomes dynamic by including updated demand forecasts for each store and re-optimizing store inventory policies in midseason. In this paper, we formulate a dynamic stochastic optimization model that determines the total order size and the optimal inventory allocation across nonidentical stores in each period. A generalized Bayesian inference model is used for demands that are partially correlated across the stores and time periods. We also derive a normal approximation for the excess inventory from the previous period, which allows the dynamic programming formulation to be easily solved. We analyze the tradeoffs between obtaining information and profitability, e.g., stocking more stores in period 1 provides more demand information for period 2, but does not necessarily lead to higher total profit. Numerical analyses compare the expected profits of alternative supply chain strategies, as well as the sensitivity to different distributions of demand across the stores. This leads to novel strategic insights that arise from adopting inventory policies that vary by store type.

2. Inventory Management of a Fast-Fashion Retail Network

Felipe Caro, JérémieGallien

To solve this problem, we first formulate and analyze a stochastic model predicting the sales of an article in a single store during a replenishment period as a function of demand forecasts, the inventory of each size initially available, and the store inventory management policy just stated. We then formulate a mixed-integer program embedding a piecewise-linear approximation of the first model applied to every store in the network, allowing us to compute store shipment quantities maximizing overall predicted sales, subject to inventory availability and other constraints. We report the implementation of this optimization model by Zara to support its inventory distribution process, and the ensuing controlled pilot experiment performed to assess the model`s impact relative to the prior procedure used to determine weekly shipment quantities.

3. The effect of product variety and inventory levels on retail store sales: A longitudinal study

Zeynep Ton,Ananth Raman

The effects of product variety and inventory levels on store sales are examined. Using 4 years of data from stores of a large retailer, we show that increases in product variety and inventory levels are both associated with higher sales. We also show that increasing product variety and inventory levels has an indirect negative effect on store sales through their impact on phantom products—products that are physically present at the store, but only in storage areas where customers cannot find or purchase them. Our study highlights a consequence of increased product variety and inventory levels that has previously been overlooked in studies of retail product variety and inventory management. It also quantifies the impact of phantom products on store sales. In addition, our study provides empirical evidence to support earlier claims that higher product variety and inventory levels lead to an increase in defect rate. We discuss the implications of our findings for retail inventory and assortment planning and for the design of retail stores.

4. Analysis of Different Inventory Control Techniques: A Case Study in a Retail Shop

-S. K. Biswas, C. L. Karmaker, Ariful Islam

The stock of substances constitutes the maximum big a part of modern belongings and running capital in any organisation. A small saving withinside the stock will reflect a vital area in gain of the organisation. In Bangladesh, the retail stores typically face two styles of stock associated troubles which might be both stock-out or overstock. As a result, maximum of the stores fail to preserve their product availability with lowest feasible stock cost. Through right stock manage strategies, opportunity of stock-out as properly as overstock conditions withinside the retail stores may be minimised. The gift paper is a case take a look at of various stock manage strategies for green stock control gadget of a retail store of Bangladesh. The sole reason of the take a look at is to offer a guiding principle for stock managers with a view to assist them to make certain product availability at proper amount as and whilst required. Relevant records have been accumulated from a famend retail store, namely, Pran RFL group, Bangladesh. This actual case demonstration will certainly assist the destiny researchers in addition to the Bangladeshi producers to preserve right manage & control of inventories.