IBM – Nalaiya Thiran
Retail Store Stock Inventory Analytics

Literature Survey

1. **Inventory inaccuracy in retail stores due to theft**
   Author: YacineRekik

   Paper consider a finite-horizon, single-stage, single-product periodic review store inventory in which inventory records are inaccurate. We assume that inventory inaccuracies are introduced by theft type errors that arise within the store. We propose a comparison between three approaches based on which the inventory system can be managed in presence of theft errors: in the first approach, we assume that the inventory manager ignores errors occurring in the store.

2. **Relationships between inventory, sales and service in a retail chain store operation**
   Author: Chris Dubelaar, Garland Chow, Paul D. Larson

   Effective inventory management is critical to retailing success. Surprisingly, there is little published empirical research examining relationships between retail inventory, sales and customer service. Based on a survey of 101 chain store units, this paper develops and tests a series of hypotheses about retail inventory. Seventy- five percent of the store owners/managers responded to the mail survey. As expected, significant positive relationships were found between inventory, service and sales.

3. **Analytics for Operational Visibility in the Retail Store**
   Author: Li Chen & Adam J. Mersereau

   Armed with a number of modern and emerging visibility technologies and facing increased competition from the internet channel, retail managers are seeking ever deeper visibility into store operations. We review two established streams of operations management research that try to overcome shortcomings of common retail data sources. The first is demand estimation and inventory optimization in the presence of data censoring, where imperfect data may cause significant estimation biases and inventory cost inefficiencies.

4. **The Effect of Product Variety and Inventory Levels on Retail Store Sales**
   Author: Zeynep Ton,Ananth Raman

   Paper examine the effects of product variety and inventory levels on store sales. 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.

5. **Retail Inventory Management When Records Are Inaccurate**
   Author: Nicole DeHoratius, Adam J. Mersereau, Linus Schrage

   Inventory record inaccuracy is a significant problem for retailers using automated inventory management systems. In this paper, we consider an intelligent inventory management tool that accounts for record inaccuracy using a Bayesian belief of the physical inventory level. We assume that excess demands are lost and unobserved, in which case sales data reveal information about physical inventory levels.