

# **Product Promotion Effectiveness: Root Causes of Stock-Outs**

By

Alankrita Nigam

Submitted to Engineering Systems Division on May 6, 2016 in partial fulfillment of the requirements for the Degree of Master of Engineering in Logistics

## **Abstract**

The unpredictable demand pattern during promotions leads to lost sales incurred due to frequent stock-outs, affecting the revenue and the brand of both the manufacturer and the retailer. The research focuses on finding out the root-causes of stock-outs in retail stores. It uses the audit response data that informs us of various states for zero on-shelf availability. These responses are used to create a fault-tree diagram that shows how different states could be reached. The root-causes mentioned in the fault-tree diagram are classified as either qualitative or quantitative root-causes. The credibility of quantitative root causes was established through regression analysis while store visits and interviews of different players of the supply chain helped to reason out the qualitative root-causes. Quantitative factors such as replenishment frequency, store sales volume and forecast accuracy seem to indicate a good correlation with stock-outs during promotions.

Thesis Supervisor: Dr. Daniel Steeneck

Title: Postdoctoral Associate, Center for Transportation and Logistics