Introduction

Store-level execution of promotional campaigns is one of the top challenges faced by suppliers in the United States (Medenwald, 2016). A stark example of how operational execution of promotional activities can severely damage their effectiveness is offered by point-of-purchase (POP) display campaigns. POP displays are structures containing inventory outside of regular shelving. They are meant to be visually stimulating, are placed in prominent positions in retail stores, and their purpose is to excite spontaneous purchases. POP displays are perceived by suppliers to be highly effective (Weiss, 2016) and suppliers invest in them heavily (for instance, according to industry sources we interviewed, P&G spends $1 billion annually on POP displays, Hershey’s spends $150 million, and Unilever $300 million). However, industry estimates also suggest that only 46% of the displays are actually placed on the sales floor during the scheduled promotion time (Neff, 2017). Displays often get stuck somewhere in the supply chain, are delivered at the wrong store, or forgotten in a store’s backroom, ending up being placed on the floor with delay (or potentially never). Poor operational execution is reducing the otherwise high effectiveness of these marketing campaigns.

In this setting we are interested in the followings questions: (a) *How much money (in the form of potential sales) is lost due to poor operational execution?* (b) *What fraction of that loss can be recovered just by introducing monitoring in the system?* It is possible that the people responsible for managing the inventory of POP displays would improve their compliance knowing they are being monitored, alleviating most of the problem. On the other hand, it is also possible that monitoring alone could have a negligible effect. (c) *What fraction of that loss can be recovered*
through pairing monitoring with information sharing and nudges? Knowing this is important, as, if monitoring plus information sharing does not recover the bulk of the lost revenues, then the only solution must be the institution of carefully designed processes that correct errors when those appear. We study these questions empirically, using a quasi-experimental setup where a large retailer in the United States invested in an IoT technology to resolve the issue of poor operational executing of POP display campaigns.

The problem we study is a potent example of a marketing initiative whose success is directly tied to its operational execution. Studies in the operations management literature focus on operational execution alone (see, for example, Delen et al. 2007, Hardgrave et al. 2013, DeHoratius and Raman 2008), while marketing studies (Chandon et al. 2000, Rust et al. 2004, Kumar et al. 2008) tend to concentrate on consumer response to various marketing campaigns, almost always ignoring operational execution. Our work links the two perspectives.

**Methodology**

To answer our research questions, we acquired a unique dataset from a major retailer in the United States. This retailer executes multiple POP display campaigns every year, and recently decided to invest in an IoT technology that tracks POP displays in its supply chain. The IoT equipment includes receivers located in stores and beacons installed on each POP display, as well as a means to deliver notifications to store managers and suppliers.

We have point of sales data (transaction line, store ID, date/time, product ID, category ID, price, quantity), campaign data (campaign ID, campaign configuration, campaign planned time window), and IoT data (beacon ID, beacon location, date/time, product ID) for >500 stores, 30 campaigns and a time span over one year. To causally identify the effect of the IoT technology on
our outcomes of interest, we use a difference in differences (DiD) estimator with multiple treatments, combined with matching to select control and treatment stores.

**Preliminary Results**

With respect to research question (a), preliminary analysis suggests that having a display on the floor for a particular week increase sales by 18% compared to the counterfactual where the display is not on the floor. Preliminary analysis also suggests that – on average – the impact of delays in execution (conditional on the number of weeks a display spends on the floor being held constant) is not statistically significant. We are currently conducting multiple analyses to answer questions (b) and (c), and will have the results ready by the time of the conference.

**References**


