



MIT SCALE RESEARCH REPORT

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Analysis of Out of Stock and Ways to counter it in Apparel Retail Sector

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EXECUTIVE SUMMARY

“Stock-out causes walk-out”

This ***walk-out*** costs retailers worldwide an astronomical amount of US \$69 billion annually. One of these retailers is the largest global apparel and footwear retailer, who is affected by the regular stock-out of their popular merchandises in apparel segment. The current study has been the direct upshot of the retailer’s intention to explore the extent of out-of-stock (OOS) within its retail store and possible ways to counter it.

“Retail is detail” - Methodology to understand root causes of OOS:

Going by above popular axiom, the study analyzes the problem of OOS from combined approaches of qualitative research and quantitative research. The former approach involves process analysis of stores through visiting and interviewing various employees across stores and regional head-quarter of the retailer. The quantitative approach undertakes data mining approach through collection of point-of-sale (POS) data across stores and categories of apparel merchandises sold by the retailer.

To complement the qualitative analysis, the quantitative approach focuses on weekly measurement of OOS after capturing OOS when week-end inventory of a SKU is zero and expressed it as percentage over total number of SKU available for sales for the given week. Various analyses are subsequently carried out after tabulating OOS% across different attributes like product categories, sales velocity and variability etc.

Collection of data consists of two most popular categories (football wear –FBL and sportswear-SW) in apparel segment of the retailer and three most active stores across the Spain. The thesis explores OOS of all merchandises covered in these categories and sold through these three stores across eight weeks. Overall the data captured by the study covers 70% of total categories offered by the retailer, 60% of time in a season and 30% of total sales of the retailer in Spain in a year.

“Achilles heel” - Findings of the study:

It is found that the lack of measurement of OOS across stores, sales and product attributes leads to inefficiency in forecasting, planning and replenishment process. While the forecasting fails to capture true demand as it is based on POS data, it leads to amplification of OOS due to higher forecast error. Similarly, planning becomes skewed as true demand across categories and sizes of apparel is not known. Finally, longer replenishment process and higher variability in replenishment time increases OOS across stores.

On the other hand, data analysis reveals that OOS% is significant for the retailers in apparel merchandise, as evident from the category and store studied. Ranging from 5% to 15% for different categories and stores, OOS seriously undermines business opportunity for the retailer. Moreover, the top selling items have significantly higher OOS% (8% to 41%) across the same categories and stores. It is also found that positive correlation between sales velocity, variability and OOS% is statistically significant.

From the study, it seems that OOS becomes "*Achilles heel*" for the retailer who otherwise has commendable performance across the world.

"Rooting out Out-of-stock" - Key Insights & Recommendations:

From the measurement of OOS% and analysis of OOS across various attributes, the study finds out relation between these attributes and OOS. From this relationship, it is explored the root causes which are primarily responsible for the way these attributes are related with OOS. The key root causes identified here are forecasting and planning, replenishment, inventory management and other store related work practices. The outcome of qualitative analysis through interviewing people and analyzing data underpins the need of restructuring forecasting, planning and replenishment mechanism.

Contrary to previous researches, the study finds that higher inventory at store level reduces OOS. This confirms that replenishment from back room to shelf is not as important as replenishment from DC to store, as far as OOS is concerned. The study finds that the store process has profound impact on OOS level as OOS is found to vary across stores with high statistical significance. Further, data in-accuracy across stores further influences OOS level. Apart from store related attributes, selling pattern including velocity and variability also impacts OOS. Finally, the product attributes also contribute to OOS level.

"Shooting the Hole" - Conclusion.

In order to reduce OOS or "Hole" on the shelf, it is concluded that measuring OOS and using it to forecast, plan and replenish merchandises is critical. Moreover, shortening replenishment lead-time, keeping inventory according to sales variability and auditing inventory at regular interval are also important.

The study also concludes that performance measurement needs to be completely changed in order to measure important operational performances to improve OOS in store. A completely new performance measurement system is proposed to capture performance of store and employee after holistically measure the performance across four different dimensions of retail business.

Overall, the study aims to provide objective information to the retailer about the current status of OOS, various attributes contributing to OOS and a comprehensive and practical ways to overcome the problem. Though the present study has limitation with respect to area (Spain), category (two categories) and time-span (eight weeks), most of the findings from the study are found to be statistically significant. It is expected that the insights and recommendations generated by the study will lead to reduction in OOS. And this will surely lead to "**higher Stock-in that will cause more Walk-in**" for the retailer.