AN EVALUATION OF FORECASTING METHODS THAT COULD BE USED IN THE BRAZILIAN AIR FORCE UNIFORM DISTRIBUTION PROCESS

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INTRODUCTION

Every year the Brazilian Air Force (BAF) spends the equivalent of approximately 15 million dollars for uniforms. The Sub-directorate of Supply (SDS) is the main unit in the BAF responsible for forecasting, purchasing, and distributing uniforms.

THE PROBLEM

Uniform purchases in BAF are executed through public procurement processes, according to Brazilian acquisition regulations. For this reason, lead times are unpredictable, taking anywhere from one month to a year to replenish an item. It was also detected that the volume of sales and inventory levels were incompatible.

METHODOLOGY

Monthly sales, prices, and inventory records from January of 2010 to July of 2015 were extracted from a database and converted to a standard spreadsheet format. Several forecasting models were evaluated and applied to randomly selected items from the database to create the algorithm.

RESEARCH OBJECTIVES

1. Understand what metrics are currently being utilized by the Supply Division at SDS;
2. Study how the forecasting process for uniform sales can be improved by the SDS;
3. Establish how to best assess accuracy of forecasting sales in SDS;
4. Assess the possibility to build an algorithm where historical sales data can be evaluated and the best forecast suggested.

RESULTS AND CONCLUSIONS

1. All costs in SDS are considered organization-wide and do not affect decisions over the purchasing process;
2. Forecasting system in place at SDS has been currently performed based on empirical inferences;
3. Decomposition Multiplicative (12-month season) and Decomposition Additive (12-month season) forecasting models clearly captured the behavior of sales in BAF’s stores;
4. Successfully built an algorithm for improving forecast system, optimizing the overall inventory management in SDS;
5. Areas for further research include inventory management policies, implementation of supply chain-related metrics.