Warehouse Space Optimization (CAT_OPTS)

Senior Design II

Project Overview

- Carolina CAT runs a large service, sales, and repair operation. This project is related to the Warehouse optimization of CAT.
- Carolina CAT feels that the current layout is not conducive to the efficient operation and desires to use System Engineering tools to optimize the existing space and provide a new floor plan layout.

Deliverables

- The team used a DMAIC process for working through this project
- New layout design of the warehouse and quantification of improvements over the existing design
- Design recommendations the warehouse

AHP

- Surveying employees from Carolina CAT warehouse allowed the team to create an AHP and a decision tree, with monetary values, tailored to the employees opinions.
- Taking into account the employees opinions will help CAT choose the recommendation that will be most likely endorsed and reinforced by the employees.

Measure - Data Analytics

- Demand by Bin Location
- Demand By Region
- Demand for 26,470 items was divided into groups of their locations and further divided into the 4 regions for our simulation

Economic Analysis

- NPV current
- Uniform Annual Cost
- Salvage Value
- Useful Life (years)

Cash Flow for Old Doors

Cash Flow for New Doors

Decision Tree

- The decision tree determines that the best option is to follow the option to optimize the workable volume by implementing new shelving where the cantilevers are currently placed.
- Although there is a cost to implementing this recommendation, this will be the most acceptable option from the employees point of view.

Visual Representations of Recommendations

- Please see external displays