Public Abstract

First Name: Miguel
Middle Name:
Last Name: Galve Salgado
Degree: MS
Degree Program: Industrial Engineering
Adviser's First Name: James
Adviser's Last Name: Noble
Co-Adviser's First Name: Karen
Co-Adviser's Last Name: Cox
Graduation Term: Fall
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Through the years, the Health Care industry has been looking at different ways to optimize the utilization and distribution of resources. Now, the correct design of these processes will make the difference between optimization versus just using automation technology. The processes are affected by technology as well as by the people using the new technology. The University of Missouri Health Care is at this cross roads preparing to employ Bar Code technology, in addition to their current systems, high census and staff shortages.

The analysis presented is based on the interaction between the quantitative performance measures of the equipment distribution process and the impact of technology to minimize the problem of delivery of medical equipment in a Hospital's environment. Based on Industrial Engineering analysis methodologies, the problem of how to control the flow and selection of medical equipment can be mapped into the basics of material handling systems, which means the right: location, product (medical equipment in this case), condition (working properly, disinfected, etc.), quantity and timing of deliveries (to attend to the patient based on priority and timelines).

The main goal is to reduce the capital expenses and operating expenses, and to optimize the patient care by maximizing the correct utilization of equipment. In order to accomplish this goal, a model that defines the interactions of the different performance variables was created. Then the model was tested under different scenarios using Monte Carlo simulation. Finally, the results of the different technology scenarios were compared using the Net Present Value method.