

Improving Patient Discharge Process

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Abstract

Hospitals are under pressure to match supply with increasing demand as well as ensuring patient safety and satisfaction. One of the challenges occur in patient discharge process. In our senior design project, the aim is to reduce orthopedic inpatients' discharge time. It's the time when patients are allowed to leave the hospital after a medical procedure. The team has applied various tools to achieve the desired outcomes. First, the team constructed a Value Stream Map, which is an essential lean tool that aids in visualizing the current process and identifies possible improvement potentials in every stage of the process. Moreover, the team used simulation to mimic the process and understand its dynamic nature then proceed with interpreting the results using statistics. In addition, a fishbone diagram was used to categorize all potential causes of our targeted issue and identify potential root causes. Using the above tools, we have proceeded with applying Six Sigma DMAIC to focus on better understanding customers' requirements and eliminating defects causing variations in quality. Finally, the team has taken benefit of all the tools applied to perform the necessary statistical analysis. Next, using these findings, the team generated alternative feasible solutions and concepts using several techniques.

Keywords

Discharge time, Six Sigma, Simulation, VSM and Process Improvement. (10 font)

Biographies

Maha Al Dhaheri is an Industrial and Systems Engineering Student at Khalifa University, Abu Dhabi, UAE. She has developed an interest in Six Sigma Methodology and Applications, Advanced Simulation, and Design of Experiments. Maha has conducted a Six Sigma project at a 5-stars hotel located in Abu Dhabi to reduce the cycle time of the bottleneck station. She conducted a time-motion study and analyzed the data using lean and six sigma tools including process maps, SIPOC diagrams, FMEA, and Control Charts. She is a member in the Industrial and Systems Engineering Student Chapter.

Mariam Ramadan is an Industrial and Systems Engineering Student at Khalifa University, Abu Dhabi, UAE. She has developed an interest in Engineering Economic Analysis, Advanced Simulation, and Mathematical and Statistical Software. Mariam has conducted an Engineering Economic Analysis project involving a real-life case study to maximize profit by investing in real estate given the tools and techniques, such as present worth analysis, benefit-cost ratio, internal rate of return and sensitivity analysis. She is a member in the Industrial and Systems Engineering Student Chapter.

Afra Al Mheiri is an Industrial and Systems Engineering Student at Khalifa University, Abu Dhabi, UAE. She has developed an interest in Healthcare Analytics and Management, Project Management, and Design of Experiments. Afra has conducted a Design of Experiments project where a simulation model was created to mimic the market model for a makeup product. Then, the effects of several factors on the number of potential customers were analyzed using Taguchi method. Finally, the optimal factor conditions were obtained to maximize the number of those customers. She is a member in the Industrial and Systems Engineering Student Chapter.

Maryam Al Shehhi is an Industrial and Systems Engineering Student at Khalifa University, Abu Dhabi, UAE. She has developed an interest in Healthcare Analytics and Management, Project Management, Data and Information Engineering. Maryam has conducted a Data and Information Engineering project where a pharmacy database was created using Microsoft Access to help organize information and make it more accessible and user-friendly by constructing tables, queries, reports, and forms. She is a member in the Industrial and Systems Engineering Student Chapter.