

Improvement optimization for DMAIC methodology: A Case study

**Gamal Mohamed Nowara,
Mohammad Abdel Halim Mansour and Islam sharafeldin**

Industrial Engineering Department
Zagazig University
Cairo, Egypt

Schultraeger@europaschulekairo.com, mamansour68@yahoo.com, and
eng_islamsharaf@yahoo.com

Abstract

Nowadays, the global market is highly competitive and in order to survive, companies need to produce products and services of high quality to achieve customer satisfaction and loyalty to stimulate top-line business growth. This paper aims to develop hybrid methodology for the traditional DMAIC methodolgy roadmap by including an optmiziation and feasibility step following the improvement stage. The proposed DMAIOC (Define – Measure – Analysis – Improve – Optimizing and feasibility – Control) methodology, ensures that the desired quality level is achieved at minimum investment costs by integrating optimization models for selection of process alternatives and adjusting optimal specification tolerance. A case study is presented with the proposed methodology that reveal the benefits of implementing six sigma improvements. A cost-benefit analysis for the implementation is then provided. The inclusion of updated optimization models with the DMAIC framework enrich the research methodology and assist management to adjust performance and choose process improvement opportunities generating in its turn the transparency necessary for management to make a right decision.

Keywords

Six sigma, process improvement, quality level, cost optimization, DMAIC