QUALITY IMPROVEMENT USING SIX SIGMA

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PREFACE

The main objective of this book is to study the role of Six Sigma methodology in quality improvement programs. The book mainly focused on 1) Six Sigma evolution and its impact on quality engineering, 2) Six Sigma tool set and resources required for successful implementation of Six Sigma methodology, and 3) Empirical implementation of Six Sigma methodology in selected industries.

The first part of the book mainly devoted in analyzing significant quality tools like TQM and relation of these in evolution of Six Sigma. The research found that there are lot of similarities between Six Sigma and earlier approaches of quality improvement programs. But at the same time Six Sigma cannot be ignored because of its methodology, metrics and deployment strategies.

The second part of the book is focused on Six Sigma methodology and infrastructure requirement in effective implementation of Six Sigma projects. Several case studies are reviewed in understanding the deployment of Six Sigma methodology in different sectors. The study found that statistical tools used in quality improvement programs gained popularity because of Six Sigma.

The third part of the book is mainly concentrated on empirical implementation of Six Sigma projects in the manufacturing industries. Four projects are executed in two industries. Two Six Sigma projects are implemented in transformers making industry, Vijai Electricals Limited (VEL). One case study (Case Study-2) is deployed in the design stage in transformer design.

Six Sigma projects implementation in this book resulted in knowledge creation which is useful in similar

manufacturing industries. From the practical case studies conducted, general Sigma level of quality found is 4.2 on the average of the results given in case studies. With DMAIC (Define-Measure-Analyse-Improve-Control) methodology and using intermediate and advanced Six Sigma tools, level of quality is improved up to 5 Sigma level. Further improvement beyond level of "5" sigma level, another approach DFSS (Design for Six Sigma) is required, which is beyond the level of the research work.

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