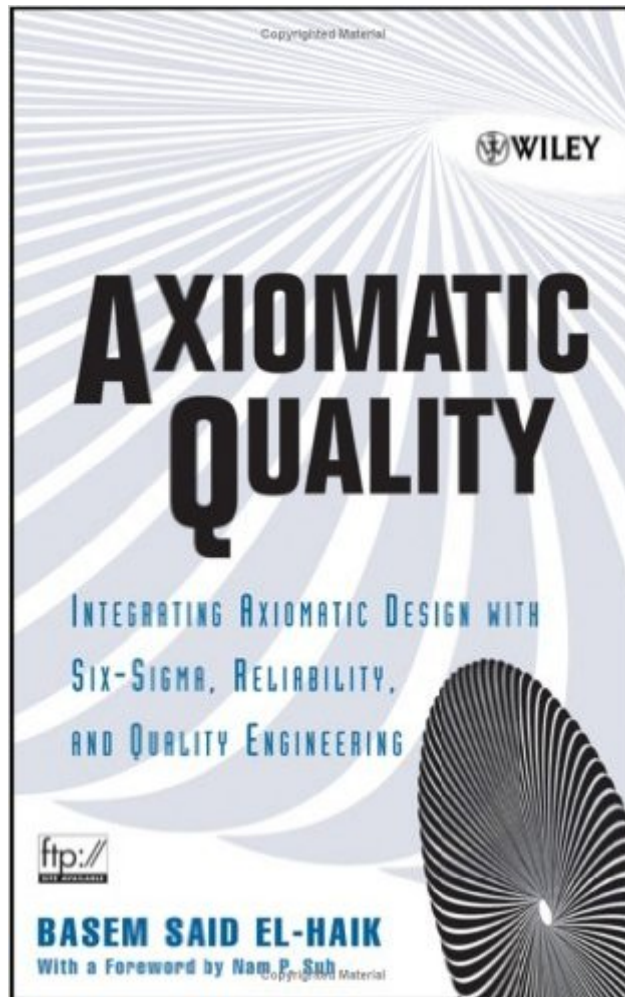# Axiomatic Quality: Integrating Axiomatic Design With Six-Sigma, Reliability, And Quality Engineering

Synopsis

The first book to integrate axiomatic design and robust design for a comprehensive quality approach As the adoption of quality methods grows across various industries, its implementation is challenged by situations where statistical tools are inadequate, yet the earlier a proactive quality system is introduced into a given process, the greater the payback these methods will yield. Axiomatic Quality brings together two well-established theories, axiomatic design and robust design, to eliminate or reduce both conceptual and operational weaknesses. Providing a complete framework for immediate implementation, this book guides design teams in producing systems that operate at high-quality levels for each of their design requirements. And it shows the way towards achieving the Six-Sigma target--six times the standard deviation contained between the target and each side of the specification limits--for each requirement. This book develops an aggressive axiomatic quality approach that: * Provides the tools to reduce conceptual weaknesses of systems using a framework called the conceptual design for capability * Reduces operational weaknesses of systems in terms of quality losses and control costs * Uses mathematical relationships to bridge the gap between science-based engineering and quality methods   Acclaro DFSS Light, a Java-based software package that implements axiomatic design processes, is available for download from a Wiley ftp site. Acclaro DFSS Light is a software product of Axiomatic Design Solutions, Inc. Laying out a comprehensive approach while working through each aspect of its implementation, Axiomatic Quality is an essential resource for managers, engineers, and other professionals who want to successfully deploy the most advanced methodology to tackle system weaknesses and improve quality.

Book Information

Hardcover: 312 pages

Publisher: Wiley-Interscience; 1 edition (April 15, 2005)

Language: English

ISBN-10: 047168273X

ISBN-13: 978-0471682738

Product Dimensions: 6.3 x 0.8 x 9.6 inches

Shipping Weight: 1.2 pounds (View shipping rates and policies)

Average Customer Review: 5.0 out of 5 starsÂ Â See all reviewsÂ (4 customer reviews)

Best Sellers Rank: #1,810,205 in Books (See Top 100 in Books)   #304 inÂ Books > Business & Money > Management & Leadership > Quality Control & Management > Six Sigma   #478

Customer Reviews

Given "Voice of Customer", the job of engineers is to develop design concept and to perfect the design concept. Their challenge is to win in "Cost", "Quality" and "Time-to-Market". Stuart Pugh said "The wrong choice of concept in a given design situation can rarely, if ever, be recouped by brilliant detailed design." He also said "One thing is certain. It is extremely easy to select the wrong concept and very difficult to select the best one." This book integrates Axiomatic Design (by Nam Suh) and Robust Design both at the theoretical and the mathematical level. The concept of axiomatic design is extremely important in generating a winning concept, while robust design optimize its performance for robustness against various noise factors such as customers' usage environment and aging.Also, there is a good chapter about reliability from axiomatic design perspective. The book contains a lot of examples that help the leader really grasp the concept. It provides an in-depth and clear coverage of all the important, philosophical, theoretical, implementation and technical aspects of the integration of axiomatic design and robust design (the so called axiomatic quality) to readers. In addition, the book discusses and illustrates very clearly the whole axiomatic quality deployment and execution process, which is an integral part of Design For Six Sigma approach. I am sure that this book will any reader develop skills in applying axiomatic design and robust design as an integrated quality approach in industrial or service implementation.Shin Taguchi, President, American Supplier Institute, Inc.Livonia, Michigan

"Axiomatic Quality" provides a thorough and chronological description of the axiomatic design and quality process. Dr. Basem El-Haik provides a detailed roadmap for the design and launch of mistake-free products, processes, and services. Mistake-free means satisfying the Customers requirements at product launch and throughout the products service life.Basem integrates the design and quality process through the use of axiomatic design. He provides a thorough description of the axiomatic design theorems (independence and information) and their many corollaries. Basem provides a thorough description of the requirements flowdown process using Quality Function Deployment (QFD) and the "zigzagging" process to develop products that satisfy the axiomatic design theorems. Best of all, he provides excellent product and process examples that span the entire design development and launch phases. The step-by-step examples can be used as

templates for the implementation and integration of the various Six Sigma tools (QFD, Axiomatic Design, Morphological Matrix, Robust Design, etc.) within any product development program."Axiomatic Quality" strengthened my understanding of the Design for Six Sigma process and its relationship to the development of superior products, processes and services. Axiomatic Quality also serves as a "how to" reference for use in the design development process. I keep a copy of Axiomatic Quality on the corner of my desk for reference and review.

Basem El-Haik has made a significant contribution to the evolving field of Design-for-Six-Sigma (DFSS). Axiomatic Design has long been a compelling methodology, but as a discrete design methodology it did not have the leverage that Basem has created by integrating it with other Six Sigma methods.This integration is particularly apparent with his work combining the design axioms developed by Nam Suh with Robust Design optimization. The application relevant introduction of Design Domains, Functional Requirements, Domain Mapping, and Decomposition (Zig-zagging) creates an effective foundation for the 'effective' implementation of Taguchi's Parameter Design.This book is a must for the professional implementer of DFSS or anyone interested in demystifying the fundimentals of system design. As as Six Sigma professional, I have included "Axiomatic Quality" as part of my evolving DFSS tool box.

With so many books advocating single methodologies as if they were a single "silver bullet", Dr. El-Haik integrates many of the leading contemporary approaches in a complementary manner.The first third of the book does a creditable job of explaining the two axioms and many of the correlaries. It then goes on to show the relationship to Quality Function Deployment, Robust Engineering, the Quality Loss Function, Concept Development, TRIZ and reliability.This book is quite comprehensive, but not at all a quick read, as there are many mathematical illustrations that need to be studied to appreciate.A added plus for those who are anxious to get right into Axiomatic Design is a software download that can make the relationships easier to handle.

Download to continue reading...

Axiomatic Quality: Integrating Axiomatic Design with Six-Sigma, Reliability, and Quality Engineering Lean Six Sigma: The Ultimate Guide To Lean Six Sigma With Tools For Improving Quality And Speed! (Lean, Six Sigma, Quality Control) Lean Six Sigma: The Ultimate Beginners Guide - Learn Everything You Need To Know About Six Sigma And Boost Your Productivity! (Lean, Six Sigma, Quality Control) Lean Six Sigma: and Lean QuickStart Guides - Lean Six Sigma QuickStart Guide and Lean QuickStart Guide (Lean Six Sigma For Service, Lean Manufacturing) Lean Six Sigma for

Service : How to Use Lean Speed and Six Sigma Quality to Improve Services and Transactions Lean Six Sigma: Value Stream Mapping: Simplified Beginner's Guide to Eliminating Waste and Adding Value with Lean (Lean, Six Sigma, Quick Start Beginner's Guide, Quality Control) Lean Six Sigma: Combining Six Sigma Quality with Lean Production Speed Six Sigma for Managers: 24 Lessons to Understand and Apply Six Sigma Principles in Any Organization (The McGraw-Hill Professional Education Series) Six Sigma for Financial Services: How Leading Companies Are Driving Results Using Lean, Six Sigma, and Process Management Lean Six Sigma For Beginners, A Quick-Start Beginner's Guide To Lean Six Sigma ! - Lean Six Sigma For Beginners: A Quickstart Beginner's Guide To Lean Six Sigma Lean Six Sigma QuickStart Guide: A Simplified Beginner's Guide to Lean Six Sigma The Six Sigma Project Planner : A Step-by-Step Guide to Leading a Six Sigma Project Through DMAIC Lean Six Sigma QuickStart Guide: The Simplified Beginner's Guide to Lean Six Sigma Certified Six Sigma Green Belt Exam Secrets Study Guide: CSSGB Test Review for the Six Sigma Green Belt Certification Exam Certified Six Sigma Black Belt Exam Secrets Study Guide: CSSBB Test Review for the Six Sigma Black Belt Certification Exam Class A ERP Implementation: Integrating Lean and Six Sigma Six Sigma for Electronics Design and Manufacturing (Professional Engineering) The Lean Six Sigma Pocket Toolbook: A Quick Reference Guide to 100 Tools for Improving Quality and Speed The Lean Six Sigma Pocket Toolbook: A Quick Reference Guide to Nearly 100 Tools for Improving Quality and Speed