



# SIX SIGMA FOR TRANSACTIONS AND SERVICE

- Project Definition and Scoping, Process Mapping, C&E Matrix, FMEA and Control Plans
- Apply process thinking in service context
- Develop customer-driven transactional processes
- Optimize your company's transactional design



# **SIX SIGMA FOR TRANSACTIONS AND SERVICE**

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## FOREWORD

Six Sigma has become a proven methodology across industries, be it manufacturing, pharmaceutical, plastics, software, or service. During the last 5 to 7 years, companies like GE, Honeywell, Caterpillar, Bank of America, and Citibank have announced their gains with implementation of Six Sigma in respective corporations. Savings of the order of a billion dollars by some of these corporations have been reported. Based on the amount of published material, it appears that that Six Sigma has become a matured methodology in the manufacturing area, however, there is a lack of literature regarding implementation of Six Sigma in the service sector. I believe *Six Sigma for Transactions and Service* will serve as a handy reference for service professionals. Most Six Sigma books are aimed at a manufacturing audience, and this book does a nice job in providing a roadmap for services desiring to apply the same principles.

*Six Sigma for Transactions and Service* fills the gap by providing readers a comprehensive information about Six Sigma in the service sector. I am impressed with the multidisciplinary experience of the authors of the book, and the organization of the information. The authors have adapted the existing framework of Six Sigma to the service environment. Readers would appreciate this customization that lacks in the Six Sigma domain. Experts try to use Six Sigma as a 'silver bullet.' Contrary to the convention, this one book contains both the improvement (DMAIE) as well as design (DMADO) aspects, which are adaptation of the well known DMAIC and DMADV aspects of Six Sigma.

I have worked with Rajesh Tyagi and Praveen Gupta at the college, and recognize their experience in the Service and Six Sigma areas. This collaboration has resulted in a very timely book. I am sure readers worldwide will find this book a good read and valuable in their Six Sigma endeavors, as I have.

Scott Young  
Chair, Department of Management  
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## PREFACE

After successfully implementing Six Sigma in manufacturing, Motorola applied Six Sigma in support functions and realized significant savings. Banks, insurance, hospitals, schools, and many service organizations have implemented Six Sigma successfully. Interestingly, many books lack adaptation of Six Sigma to the service (transaction or non-transactional) environment. However, questions arise about how to go about adapting and implementing Six Sigma in service organizations. Clearly, there is a need to provide integrative perspective with solid academic background combined with practical applications and case studies. Various new tools and techniques need to be applied to the transaction and service world.

*Six Sigma for Transactions and Service* offers an evolving set of principles and methods. This book presents a strategic, operational, and design perspective of Six Sigma for the service environment. Having co-authors and contributors with engineering, business, academic, quality, customer service, and consulting backgrounds brings out a diversity of ideas, and leads to an innovative application of Six Sigma in service organizations.

The book is organized in three parts. Part One focuses on the role of services in the economy, service benchmarks, the service component in a corporation's value chain, introduction to quality in transaction and services, and recent trends and challenges faced by service sector.

Part Two expounds Six Sigma methodology for transaction and services. An adaptation of DMAIC (define, measure, analyze, improve and control) to DMAIE (define, measure, analyze, innovate, embed), which is more suitable to the service environment. Here the focus is to emphasize the creative and cultural aspects of service environment. Several tools including service blueprinting, regression analysis, mind mapping, data envelopment analysis, and TRIZ (Russian acronym for the theory of solving inventive problems) have been presented besides

standard DMAIC tools. A set of templates is provided to ease the practice of DMAIE in capitalizing opportunities in the service operations.

Part Three makes this book unique in the sense that the authors have developed two basic axioms of service operations. These axioms are used to comprehend service operations and utilize necessary Six Sigma tools to design service processes with improved performance. Also, Design for Six Sigma is expounded in this section to make this handbook a reference book for service applications. The conventional Design for Six Sigma methodology DMADV (define, measure, analyze, design, and validate) has been retooled as DMADO (design, measure, analyze, design, optimize) to ensure effective implementation in the service environment. Several tools from Pugh's concept selection, quality function deployment (voice of customers), and robust design have been expanded for practical implementation.

Part Three also covers the implementation of Six Sigma methodology in service firms. A road map is presented to assist in the implementation of Six Sigma. Chapter 14 looks into sample service functions for Six Sigma implementation. In addition, a chapter has been devoted to human capital, a critical component of service functions. Finally, today's hot topic, outsourcing, is investigated and looked into for application of Six Sigma.

The authors believe this book will present Six Sigma for the service environment in an innovative way to enhance its value proposition, and guide corporations in practicing Six Sigma in an effective way at the corporate, project, and design of service level.

## ACKNOWLEDGMENTS

Six Sigma has been in practice for many years now. There are more than 200 books that have been published on this topic. To write a Six Sigma book for the service arena meant adapting current practices to the service industry in an innovative and effective way. Besides, creating an integrated book that helps understand the peculiarities of the service environment and includes Six Sigma concepts, as well as Design for Six Sigma methods, one must present Six Sigma in a way that will allow the reader to go to one source for all information. Such a book could only be developed through collaboration. Our team that collaborated on *Six Sigma for Transactions and Service*, consists of individuals who have enormous experience in the area of design, business, performance improvement, and service. We all are privileged to come together for this project and be able to complete the book. Working on a project with experienced team members is a learning experience and fun. It has been a very enjoyable and intellectually rewarding experience to explore new frontiers in the service sector. We could discuss topics through teleconferences, late night meetings at home, or through emails. Having four co-authors work together, means many families suffered the fate of an author's family. We would like to acknowledge their contributions as follows:

### **Rajesh Tyagi**

I am grateful for the love and encouragement my parents, brothers, and sister have always provided during every endeavor in my life. And, most important, I would like to thank my wife, Anjali, who makes my life wonderful and whom I love with all of my heart.

### **Rajeev Jain**

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Rajesh Tyagi  
Rajeev Jain  
Praveen Gupta  
Parveen Goel



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