Lean Six Sigma That Works

Bill Carreira and Bill Trudell
Amacom, 2006
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Reviewed by Paul Harmon

Both Lean and Six Sigma have been around for a long time. Arguably, the literature of Lean begins with the publication of *The Toyoda Production System* (in Japanese) by Taichi Ohno in 1978. (The book wasn't published in English in 1988.) The real book that started US managers talking about lean, however, was *The Machine That Changed the World* that James P Womack, Daniel T. Jones and Daniel Roos published in 1990. Six Sigma began at Motorola in the mid-Eighties and has many fathers. (For the best history of these early years, read "The Mists of Six Sigma," a short paper that Alan Ramias published on BPTrends in October of 2005.) Since the mid-Eighties there have been numerous books and articles on Six Sigma. (Amazon.com lists over 3,000 entries.)

Interestingly, there has never been a Lean or Six Sigma Association that was in a position to establish a definitive standard for what either Lean or Six Sigma means, or what a green or black belt requires, and each company that provides Lean or Six Sigma training or accreditation follows its own rules. Recently, most leading Six Sigma training companies have begun to link the two terms, referring to their practice as Lean Six Sigma. There's a definite logic to this movement, since, in essence, Six Sigma and Lean are both rather narrow approaches to business process change and the combination provides Lean Six Sigma teams with a broader collection of tools.

Six Sigma has always focused on improving processes by understanding and controlling the variation in process outputs. In essence, a Six Sigma team aims at making a process more consistent and predictable. They have a five-phase problem solving process (DMAIC, Define, Measure, Analyze, Improve and Control) and lots of tools and techniques that they can use to measure processes, analyze sources of variation, and make processes more predictable. I've read half a dozen Six Sigma books and I am well aware that most make a token bow to process redesign and process management, but I know that all the books devote 85% of their text to describing how to implement DMAIC projects. (There is also a specialized area of Six Sigma that focused on new product design, usually referred to as DFSS -- Design for Six Sigma – but it is really a special engineering process for designing new products, and is only used by a very small and specialized group of Six Sigma practitioners.)

Lean, on the other hand, is primarily concerned with the elimination of waste. They begin by defining activities as either value-adding or non-value-adding activities, and try to eliminate as many of the non-value-adding activities as they can. In addition, there is a system-wide aspect of Lean that looks an what they term the "value stream" (I.e. Value Chain) and seeks to streamline the flow of goods throughout the entire process. The main emphasis here is to create processes that "pull" parts through the system as they are needed to avoid unnecessary inventory.

There are very cursory definitions of Lean and Six Sigma, but they emphasize important aspects of each. Both originated in the quality control movement, and were designed to improve manufacturing processes. Both focus on specific aspects of processes. Each has subsequently

been extended by bright practitioners and, depending on where you look, undoubtedly involve other things besides the elements I have highlighted. (Two years ago, for example, every Six Sigma conference seemed to have to include a talk on TRIZ, the Russian inspired approach to engineered innovation.)

Since the various vendors began to speak of Lean Six Sigma I have been looking for a book that would explain how to combine the two sets of techniques. Bill Carreira and Bill Trudell have provided one that fails to fill the bill. The book is well-written, however, and provides lots of specifics on how to actually implement the lean approach. These guys aren't theorists and they lean toward informal suggestions rather than models and architectures. For example, right up front, they ask if you should use Kaizen (the Lean project process) or DMAIC, and give a on-the-one-hand, on-the-other-hand answer. (E.g. If the project is going to involve lots of data and lots of statistical analysis, you should probably use DMAIC.) This is good advice for those interested in treating Lean and Six Sigma as sets of tools and just pulling tools from the tool box as needed. It doesn't, however, provide a framework for integrating the two or a good approach to systematically getting the most out of the combined set of techniques.

The book itself is divided into two parts, one focused on concepts and the other on techniques. The outline pretty much illustrates this:

Introduction: The Why
Part 1 The What
    1. Overview of Lean Six Sigma
    2. Customer Satisfaction
    3. Waste
    4. Value Added, Nonvalue Added, Required Nonvalue Added
    5. Flow and Pull vs. Push and Batch, Balance
    6. Velocity, Throughput and Lead Time
    7. Cost and Profit – Cash Flow
Part 2 The How
    8. The Basic Tools of Lean Six Sigma
    9. Value Stream Mapping (Baselining)
    10. Lean Engineering Analysis
    11. Setup Reduction
    12. 5S
    13. Total Productive Maintenance (TPM)
    14. Practical Application of Lean Six Sigma: Indirect Expenses
    15. Project: Increase Throughout on an Assembly Line
    16. Project: Reduce Jet Ski Warranty Costs
    17. Project: Eliminate Rework—Fiberglass Bath Tubs and Showers
    18. The Psychology of Lean Six Sigma

A quick glance at this list of chapters will reveal the problem with this book. It's a book written by Lean practitioners who are experienced in manufacturing. They provide some good ideas about how Six Sigma concepts might be used on Lean projects, and they provide lots of information on Lean techniques and how to use them in actual projects. They don't provide much on Six Sigma and they don't provide the kind of balanced advice that would help a Six Sigma organization determine just how to integrate Lean practices with the existing Six Sigma practices in a systematic manner.

Lots of familiar Six Sigma charts are present and lots of data is presented and analyzed. In the end, however, I would have to classify this book as a book that an experienced Six Sigma

practitioner should read to learn about Lean techniques. (It wouldn't help a Lean practitioner learn about Six Sigma. Many other introductory Six Sigma books would do a much better job.)

It isn't the introductory book to Lean Six Sigma that I was looking for – the book that will pull all the pieces of the two approaches together and provide practitioners with a good overview of both and a clean methodology to use to determine just when each of the two sets of techniques would be best employed. For one thing, Six Sigma has moved beyond manufacturing environments and is being widely used in a variety of different settings. Lean is still more focused on manufacturing, but a book that really explained how to use the two together will need to generalize Lean a bit to make is more appropriate for service and sales environments. Similarly, leading Six Sigma practitioners have been working with high-level process modeling techniques like the Supply Chain's SCOR methodology, and a good Lean Six Sigma book ought to consider how process Kaizen can be combined with SCOR and ITIL to provide better enterprise-level guidance for selecting new projects. And then there are all the other techniques that still need to be combined with both Six Sigma and Lean, including techniques to improve the day-to-day management of processes, ways to analyze process decision making, and techniques for determining how to improve and maintain human performance during on-going processes. There's a lot going on in the process change at the moment and Six Sigma practitioners need a new generation of books that provide guidance about how to practice Six Sigma today, taking advantage of Lean and all of the other new technologies that are being explored.

Meantime, given the number of Six Sigma practitioners, this book should fill a very useful niche and I suspect that most of the Six Sigma people who read it will find it useful. In fact, I'd recommend it to Six Sigma practitioners as a very nice introductory book for those who wish to use Lean in manufacturing environments.

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