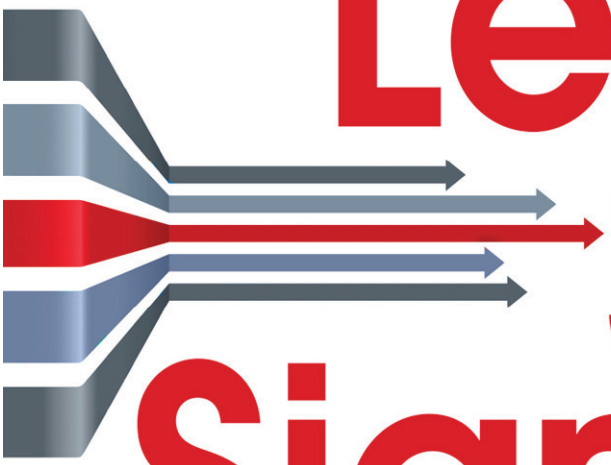
"Strategic and practical, *Innovating Lean Six Sigma* should top the reading list for anyone who wants to successfully implement operational excellence."
—Michael L. George, bestselling author, *Lean Six Sigma* and *Lean Six Sigma for Services.*

# Innovating Lean Six Sigma



## A Strategic Guide to Deploying the World's Most Effective Business Improvement Process


**Kimberly Watson-Hemphill**
Coauthor of *Fast Innovation*
**Kristine Nissen Bradley**

## Praise for *Innovating Lean Six Sigma*

A book that is both strategic and practical, *Innovating Lean Six Sigma* should top the reading list for anyone who wants to successfully implement operational excellence. The methods described in this book will drive significant financial value for your company, engage and develop your employees, and help you meet the ever-changing needs of your customers. Kimberly and Kristine have continued to build on the foundations of everything that we started, advancing the approach based on their work with clients from around the world, and have summarized their learnings in this easy-to-read book.

—Michael L. George, bestselling author of *Lean Six Sigma* and *Lean Six Sigma for Services*

Our company implemented Lean Six Sigma after a period of rapid growth to become more process-focused, customer-focused, and data driven. The approach engaged and inspired our employees to improve our business processes, and we achieved a 10X ROI in the first year. Full of case studies and practical examples from the authors' many years of experience, *Innovating Lean Six Sigma* should top the reading list of any business leader.

—Tom Wise, CEO, Superior HealthPlan

The Lean Six Sigma initiative at Dr Pepper Snapple has been a major contributor to its success since 2011. In that time, their free cash flow has increased to an all-time high and the stock price has more than doubled, outpacing its peers by nearly 100 percent. Dr Pepper Snapple is now the Consumer Products leader in both inventory and capital productivity and has publicly reported over $200 million in cash savings, all thanks to LSS. I was very blessed to establish and lead that initiative from 2011 to 2015 with the help of fantastic

practitioners such as Kimberly Watson-Hemphill, who with this book has provided a terrific framework for any executive looking to achieve breakthrough results from Lean Six Sigma.

—Will McDade, Chief Financial Officer, Interstate Batteries, former Senior Vice President, Dr. Pepper Snapple

*Innovating Lean Six Sigma* is an executive's how-to guide for deploying and maintaining a successful process improvement initiative. The practical and insightful material has been indispensable in developing a framework and system to equip and engage our employees to improve the member experience by creating standardized, consistent, and value-added processes.

—Michael Crowl, VP Finance/CFO, University Federal Credit Union

The Lean Six Sigma principles described in the book have benefitted our business and have resulted in reducing our manufacturing times by over 50 percent, which allowed us to almost double our output! This was accomplished by performing simple line balancing, continuous flow, and using a takt rate board to monitor progress. We used these tools to balance the workload to allow for smoother flow and less downtime waiting on the next machine.

—Clint Lundquist, Continuous Improvement Leader, Everi

# INNOVATING LEAN SIX SIGMA

## A Strategic Guide to Deploying the World's Most Effective Business Improvement Process


## Kimberly Watson-Hemphill AND Kristine Nissen Bradley




New York Chicago San Francisco Athens London Madrid
Mexico City Milan New Delhi Singapore Sydney Toronto

ISBN: 978-1-25-958441-1

MHID: 1-25-958441-0

The material in this eBook also appears in the print version of this title: ISBN: 978-1-25-958440-4, MHID: 1-25-958440-2.

eBook conversion by codeMantra
Version 1.0

# Contents

# Part 1

# Firing on All Cylinders

## Building a Strong Foundation for a High-Functioning Lean Six Sigma Initiative

# 1

# What's First?

## The Big Four Questions That Shape a Deployment

The headlines around Lean Six Sigma almost always involve big deployments that have been spectacularly successful: Caterpillar's 2001 Annual Report, for example, noted that in the first year of deployment, its gains from Six Sigma were already more than twice the implementation costs. By its 2002 Annual Report, Caterpillar was reporting net free cash flow of $645 million in its machinery and engine operations, attributed to Six Sigma. Eli Lilly and Company reported, "We exceeded our goal of $250 million in benefit from Six Sigma in 2006, and that is on track to double in 2007." The company's success continues. In its 2014 annual report, Eli Lilly reported 1,700 projects completed with financial benefits of $770 million.

Sounds pretty good, right? These were both great rollouts, continue to drive significant value, and are certainly the kinds of results that any executive would be happy to report to senior leadership,

the board, or shareholders. And they set the standard for what other companies hope to achieve with their initiatives.

Based on these famous success stories, people may think that if they are to achieve meaningful results, they need to launch a large corporatewide deployment that requires an enormous investment of time and resources.

In reality, success with Lean Six Sigma has come in many shapes and forms. What the famous and the not-so-famous success stories have in common are not the goals, scale, or structure of the deployment; rather, it is that their leaders have thought carefully about how to bring together the specific pieces of the puzzle needed to build a foundation that works for them.

There are hundreds of decisions that go into building the foundation for a strong Lean Six Sigma program. The most important ones fall into the Big Four categories—basic and seemingly simple questions whose answers define the framework for a deployment:

- Why?
- What?
- How?
- Who?

Making sure you are clear about the answers to these questions will help you design or improve a Lean Six Sigma initiative. In this chapter, we'll walk through each question and discuss the different ways in which it can be answered. Our goal is to help people who are just starting out understand the cornerstones of success that they need to establish, and help those who are struggling with their deployments to understand what gaps they may need to address. (If your company already has clear answers to these questions, you may benefit from a more formal, structured assessment, which we'll discuss in Chapter 6.)

## Big Question 1: Why?

Although all of the Big Four questions are interrelated, the biggest impact comes from the question of *why* you are implementing Lean Six Sigma. If you aren't clear about the why, your decisions about who, what, and how are likely to miss the mark. As obvious as this sounds, too many companies fail to think through the *why* question in depth; their leaders hear about the big gains and the substantial dollars from the famous deployments and want a piece of that action—and that's as far as they go. Their *why* is couched only in terms of a certain figure on the bottom line.

It's true that for-profit, publicly held businesses need to be able to quantify the financial benefits from Lean Six Sigma fairly easily and have those benefits come fairly quickly, or else leadership loses interest. (And history has shown that, over time, successful deployments generate at least a 10 times return on investment.) But gains can almost always be measured in terms other than dollars, and the nonfinancial gains often provide an equally compelling answer to *why do this*. Here are three examples that illustrate different ways in which the *why* question has been answered:

- A financial services company had grown rapidly through acquisition and needed a methodology to unify the culture and streamline its core processes. Lean Six Sigma provided a foundation and methodology that established a common language concerning process improvement and product design. It also helped the company create a culture of continuous improvement. By using Lean Six Sigma to remove waste, the company was able to decouple its cost curve from its growth curve—meaning that it could generate much more value for the amount of effort invested, significantly increasing profitability.

- A manufacturing company was experiencing significant margin pressure as a result of overseas competition. The leadership team chose to deploy Lean Six Sigma to reduce operational expenses and leveraged the design methodologies to enhance the customer's experience and introduce new products. They also were able to use Lean Six Sigma to increase the skill level of the workforce and prepare people for future leadership positions within the company.
- A large hospital was interested in improving its patient satisfaction scores. Using Lean Six Sigma, the employees focused their improvement efforts on patient-facing processes that historically had caused patient frustration and dissatisfaction. The initiative was driven not by a need to reduce costs, but by a desire to better satisfy the hospital's customers. Ratings for the hospital improved in every category by 20 to 40 percent.

The *whys* in these three examples—aligning the culture, becoming more competitive, and increasing customer satisfaction—are common reasons for using Lean Six Sigma, but they represent just the tip of the iceberg. Your organization will have to define your own *why*. What would have to happen for your initiative to be considered a success? Ideally, think beyond the dollars to describe ways in which Lean Six Sigma can help you solve your organization's challenges. Perhaps a new market is opening up, the competition has made advances in services or technologies, or your company has to stem the loss of market share.

Being clear about the *why* will provide a compelling reason for using Lean Six Sigma and will shape the goals you set. It will also help you define what success looks like. If you're using Lean Six Sigma to become competitive in new markets, then success would be increased revenue and expanded market share. If you need to make

operational improvements, then success could be measured in terms of reduced cycle times, lower costs, and/or higher quality.

## Big Question 2: What?

The *what* question for a Lean Six Sigma initiative means what problems and improvement opportunities will be addressed. Answering that question should start with defining what it is that you need to do substantially differently from and/or better than before in order to meet the challenge spelled out by the *why*. Do you need to be able to get product out the door faster in order to stay competitive? Answer more customer requests correctly to improve satisfaction? Reduce costs or improve quality to improve the bottom line? Create innovative products and services so that you can enter new markets? Unite your culture so that you improve communication and productivity?

Once you know broadly what issues you need to tackle, you can get more specific about choosing projects that will contribute to those goals. This is a linkage that has often not been handled well in the past. Decades ago, in the very early years of the quality improvement movement in the United States, teams were often allowed to select their own projects based on any criteria they wanted, including the convenience of the project leader. New deployments today sometimes repeat this mistake—in their eagerness to get the initiative going, the company lets individuals select any area from their daily job where they see an opportunity for improvement. At best, opportunities identified this way result in localized improvement. At worst, they lead to projects that have little impact on business results and that can quickly become a joke across the company. If management does not see the projects chosen as critical, support for the effort is likely to fade quickly.

As a reaction to this bottom-up approach, the pendulum then swung rapidly toward a top-down method: the people at the top of the business unit or organization would identify priority goals, which were then divided up and launched as projects. While projects must be linked to business priorities, a purely top-down approach, if not deployed correctly, can lead to massive, poorly scoped projects that can take years to complete.

To combat these problems, successful deployments today are based on structured project selection approaches that balance out competing factors so that projects have direct links to strategic goals (the *why* you have already identified), but also are meaningful to the frontline staff members who will do the project work. If this is an area where your company needs help, you'll find specifics about project identification and selection methods in Chapter 5. As a quick overview, the factors that go into the most robust processes incorporate:

- Both top-down and bottom-up methods for identifying potential projects
- Identification of diverse criteria for both benefit and effort that can be used to score the projects against the business priorities
- A prioritization process that evaluates each project against the weighted criteria

As you can probably predict, the focus of the project identification process will vary by organization. Here are two examples illustrating key differences:

- To identify the highest-value projects for its Lean Six Sigma rollout, a multinational manufacturer conducted a series of assessments at multiple plants, in the supply chain operations, in the sales organization, and in the regulatory functions. They tied their project selection and measurements

to established operational targets involving revenue generation, quality, cost, and productivity. Looking across multiple areas for ideas that met the criteria led to a diversity of projects. For example, high-value opportunities were identified in improving plant efficiencies, streamlining the human resource process, reducing days' sales outstanding, and optimizing the sales process.

- A healthcare company began by identifying their core processes. They then linked their annual goals to improvement needs in those core processes as a way to select target project opportunities. Some projects directly improved patient care. Others improved satisfaction with the call centers. Some streamlined bureaucratic processes that delayed payment to all parties. Still others reduced costs, such as the cost of expired materials and obsolete medical supplies.

## Big Question 3: How?

Many problems with the *how* of Lean Six Sigma are related to that old saying, "If you have a hammer, every problem looks like a nail." There is a wide variety of methods and tools that are included under the Lean Six Sigma umbrella, and in the past, many companies took the approach of applying the full set of standard tools to every problem. They would launch a Six Sigma investigation that lasted several months to solve a problem that had an obvious solution. Or they would apply a process improvement road map to a situation where a complete redesign was needed.

Six Sigma and Lean are both adaptable improvement approaches, but neither is suited to all problems under all circumstances. Likewise, there are different road maps that lead to different types of outcomes (improving existing processes or products versus developing new designs, for example).

Knowledge about when to use which method and which road map is more sophisticated today, and organizations that fail to take the differences into account can waste time and effort. The principles we recommend are:

- Develop expertise in both the Lean and Six Sigma methodologies so that you understand which toolset is appropriate when. A few people still hold out for a pure Lean or a pure Six Sigma approach, but they are in the minority.
- Use the DMAIC (Define–Measure–Analyze–Improve–Control) structure as the road map for problem solving and process improvement. There are two basic types of DMAIC projects:
  - The traditional Lean Six Sigma project team approach, where a group meets regularly over a period of time to solve a difficult problem that has no obvious solution. The emphasis is typically on tools that focus on understanding the voice of the customer, collecting the right data, and analyzing the data with statistical methods to identify the true root cause of the problem.
  - Kaizen projects, where a group of selected team members are brought together for an intense one-week period to complete a cycle of rapid improvement on a problem with a smaller scope. This structure is best used in situations where process waste or inefficiencies are a problem and the Lean toolset is more appropriate.
- Use the DMEDI (Define–Measure–Explore–Develop–Implement) road map for situations in which you need to design or substantially redesign a product, service, or process.

The emphasis in DMEDI is on understanding customer needs, creatively innovating and exploring design alternatives, and optimizing the design.

- Consider using business process management (BPM) to establish a solid foundation of knowledge about the needs and functions of core processes. BPM emphasizes measurement, documentation, and control. (See Chapter 8 for a discussion of BPM.)

## Big Question 4: Who?

Having staff members who are dedicated to continuous improvement was an innovation that arose when it became clear that it was unrealistic to expect people to run improvement projects and fulfill all of their regular job duties as well. Today, every organization that is successful with Lean Six Sigma has people who are dedicated either full- or part-time to project work, known by labels that are now part of the business lexicon (deployment champion, Black Belt, Master Black Belt, Green Belt, etc.). But there are still vast differences in the people that companies get to fill these positions and how much of their time is officially allocated to improvement work.

Back when the practice of using dedicated resources started, there were two common pitfalls in staffing these positions. Because there is a strong data element at the core of both Lean and Six Sigma, some companies picked their most technical colleagues. While this had the advantage that the people were able to learn the new tools easily, these more technically oriented staff members occasionally showed a tendency to become more enamored with the tools and data analysis than with the results or teamwork. Other companies simply assigned whoever was most readily available—perhaps

because they were unsure about the potential of the effort and were therefore unwilling to devote their brightest or most promising colleagues. Companies that used people who, to put it politely, weren't wanted for any other position had difficulty generating the kinds of results that would build enthusiasm and support.

What practitioners came to realize was that it was much easier to teach people the tools and methodologies of Lean Six Sigma than it was to teach them leadership and teamwork skills. It was also clear that for a Lean Six Sigma initiative to be taken seriously, companies had to fill key positions—the deployment champions, Black Belts, and Master Black Belts—with top talent who were seen as having a bright future in the organization. Talented people who want to rise in the organization will want to make sure that they tackle important issues that will capture the attention of senior leaders. They will also want to make sure that they are using the methods that will give them the best possible chances of success. To make sure that these top people are successful during their Lean Six Sigma rotation, the best practice is for them to become full-time, dedicated Black Belts for a period of a year or two so that they have plenty of capacity to devote to improvement work.

Other lessons involving the *who* of Lean Six Sigma have come from deployments that simply failed to establish a foothold in the organization. This happened when the organization failed to link the Lean Six Sigma effort with the needs of the people who had the responsibility for running the business. All deployments, no matter what their size, take effort and commitment if they are to become established and to be sustained over time. That kind of dedication will happen only if supervisors, managers, and executives see the effort as key to *their* success and that of *their* part of the business. In short, the deployment must contribute to the business goals of line management. And the best way to make sure that this happens is to give line management oversight responsibility: have a C-level

### Where What Meets Who

The *what* and *who* questions come together at this point because you have to think about how to best prepare the people involved in the deployment for their new responsibilities. The following guidelines are widely used today:

- Provide at least an awareness level of training to the executives and managers who will be sponsoring or providing oversight for the projects. Do the same for people who may be called upon to help out with the project work.
- Project leaders need an in-depth knowledge of the new methods. They will also need coaching on their projects by experienced practitioners as they learn to apply the new tools.
- Select a training curriculum that is appropriate for your business and the methodologies you will be using.
  - Services-based for transactional or service environments.
  - Operations-based for manufacturing or logistics audiences.
  - Healthcare is an unusual mix of manufacturing and transactional concepts, so training facilitated by practitioners with healthcare experience is recommended.

executive who champions the deployment and middle managers who actively participate as sponsors.

Organizations that follow these guidelines have reaped a secondary benefit: the experience with Lean Six Sigma has helped their

managers and managerial candidates become better and more capable leaders. Here are three examples:

- A large hotel chain trained their manager candidates in Lean Six Sigma methods to ensure that future leaders were more data-driven, process-driven, and customer-focused.
- A pharmaceutical company wanted to broaden the skills of its high-potential employees and better enable them to work cross-functionally across the business. Lean Six Sigma gave them a new toolkit, and also provided opportunities for professional development.
- A financial services company that was experiencing rapid expansion needed to develop more of a process focus to keep up with its growth. The CEO selected Lean Six Sigma to develop a foundation of greater analytic abilities and data-based decision making within his management team.

## Big Four Question Alignment

Working through all these questions, either at the beginning of a new deployment or when the deployment team is looking to make changes in an existing program, establishes a solid foundation for success, especially if you make sure of the links between all the elements.

As an example of how the questions come together, consider a consumer packaged goods company that was looking to enter new markets to expand their global reach and increase sales (see Figure 1.1). The company's leaders knew that there had been supply chain issues with similar expansions in the past, so they decided to implement Lean Six Sigma in key geographies throughout the supply chain to improve efficiencies, streamline operations, and reduce errors. Additionally, the new markets would require some completely new products as well as some minor product line extensions.