Chapter 1

Better Business and Better Performance: Defining Six Sigma

In This Chapter

- Looking at the many definitions and synonyms of Six Sigma
- Introducing the proven managerial horsepower of Six Sigma
- Recognizing that Six Sigma isn't just another initiative-du-jour
- Identifying a formidable business force

It's not often that a *For Dummies* book topic first needs a formal definition. After all, you know in general what gardening, dating, and even marathon training are. But "Six Sigma"? Even if you remember that sigma is the 18th letter of the Greek alphabet, why six of them? And what happened to the first five sigma?

In this chapter, we offer you a foundational knowledge of Six Sigma so that the rest of this book makes sense and you can get the most out of the rest of the book, which ultimately helps your business improve by leaps and bounds.

Discovering What's Behind the Name

It's okay if you don't know what Six Sigma is at all, or don't understand every aspect of it. That's because Six Sigma — once a precise, narrowly-defined term — has grown over time to represent a number of concepts:

- *Six Sigma* is a problem-solving methodology. In fact, it's the most effective problem-solving methodology available for improving business and organizational performance.
- *Six Sigma performance* is the statistical term for a process that produces fewer than 3.4 defects (or errors) per million opportunities for defects.
- A *Six Sigma improvement* is when the key outcomes of a business or work process are improved dramatically, often by 70 percent or more.

- A *Six Sigma deployment* is the prescriptive rollout of the Six Sigma methodology across an organization, with assigned practices, roles, and procedures according to generally accepted standards.
- The *Six Sigma toolset* is the collection of methods and tools, including statistics and analytics, that Six Sigma practitioners use to consistently achieve breakthrough levels of improvement.
- The *Six Sigma* methodology is often combined in practice with Lean methods in a hybrid practice known as *Lean Six Sigma* or *Lean Sigma*.

Six Sigma is a methodology for minimizing mistakes and maximizing value. Every mistake an organization or person makes ultimately has a cost — a lost customer, the need to do a certain task over again, a part that has to be replaced, time or material wasted, efficiency lost, or productivity squandered. In fact, waste and mistakes cost many organizations as much as 25 to 40 percent of their revenue! That's a shocking number. Imagine throwing 25 to 40 percent of your money away in the garbage every time you cash a check. It may sound ludicrous, but that's what many organizations do.

All businesses, organizations, and individuals have room to improve. No operation is run so tightly that another ounce of inefficiency and waste can't be squeezed out. By their nature, organizations tend to become messy as they grow. Processes, technology, systems, and procedures — the ways of doing business — become cluttered with bottlenecks, meaning work piles up in one part of the organization while other parts sit idle with nothing to do.

Work is often performed incorrectly, or the outcome is flawed in some way. When this situation happens, you scrap products and services and have to do the work over again. You consume additional resources to correct a problem before it's delivered to the customer, or the customer asks later for a "redo" — a new product or a more satisfactory service.

Sometimes, flaws and defects aren't the problem, but a product or service simply takes too long to produce and deliver. Think about the problems a mortgage company would have if it processed home loans perfectly but did so five times more slowly than the competition. That's a perfect disaster.

Six Sigma was once a quality-improvement methodology, but now it's a general-purpose approach to minimizing mistakes and maximizing value: How many products can you produce, how many services can you deliver, or how many transactions can you complete to an expected level of quality in the shortest possible amount of time at the lowest possible cost?

Six Sigma takes effort and discipline and requires you to go through the discomfort of change. But soon the pain is transformed into improved performance, lower costs, more success, and happier customers.

No pain, no gain

The Six Sigma approach isn't for the faint of heart or for the unprepared organization. It's intense and rigorous, and it entails a thorough inspection of the way you do everything. Six Sigma sets ambitious business objectives and measures performance in a way that forces accountability. It doesn't allow a management team to become complacent; rather, it exposes waste that otherwise would remain largely invisible.

Six Sigma takes a business out of its comfort zone, but for a relatively short time. After the first project gains materialize and the money starts flowing to the profit margin, a cultural change takes hold. The early discomfort of changing business processes gives way to success, problems become opportunities for improvement, and the organization begins to enthusiastically leverage the methods and tools of Six Sigma more pervasively and with a keen eye on value.

Tackling Six Sigma from the Managerial Perspective

Although Six Sigma has many definitions (see the preceding section), Six Sigma action occurs on two levels: the *managerial* and the *technical.* This chapter introduces the managerial level, while Chapter 2 begins to look at the technical side.

At the managerial level, a Six Sigma initiative includes many units, people, technologies, projects, schedules, and details to be managed and coordinated. It also involves developing many plans, taking many actions, and completing a lot of specialized work. For all these factors to work in concert, and for the technical elements of Six Sigma to be effective, you have to set the proper management orientation.

Bridging science and leadership

From a management standpoint, you use Six Sigma to achieve predictability and control of performance in a business or a business process by applying the methods of science to the domain of leadership.

The achievements of machinery, technique, process, and specialization of labor have collectively enabled the explosion of mass production and the consumer society. Science dictates how all the parts, materials, machines, and people on the assembly line interact to turn out many "widgets" at the highest possible speed and the lowest possible cost.

Chalking up radical corporate success

Six Sigma helps organizations achieve breakthrough improvement, not incremental improvement. In short, Six Sigma is a path to dramatic improvement in value for your customers and your company. Companies engaged in Six Sigma have realized staggering business success.

- **General Electric** profited between $7 to $10 billion from Six Sigma in about five years.
- **Dupont** added $1 billion to its bottom line within two years of initiating its Six Sigma program, and that number increased to about $2.4 billion within four years.
- **Bank of America** saved hundreds of millions of dollars within three years of launching Six Sigma, cut cycle times by more than half, and reduced the number of processing errors by an order of magnitude.
- **Honeywell** achieved record operating margins and savings of more than $2 billion in direct costs.
- **Motorola,** the place where Six Sigma began, saved $2.2 billion in a four-year time frame.

And Six Sigma isn't just for large organizations; small and medium businesses use Six Sigma to add to both revenues and profits.

Managerially speaking, the goal of Six Sigma is to inject control, predictability, and consistency of results into the production of a successful organization, such that the widgets are produced with great consistency and minimal variation.

Early in the 20th century, Henry Ford applied the principles of science to the production of cars. By following set processes and by optimizing repeatable processes, Ford and others made goods that displayed little variation in their final states and could be mass-produced without requiring extensive education and years of finely honed skills among the assembly-line staff.

Countless times every day in the United States, people open a water faucet and experience the flow of clean, clear water, which is possible because reliable purification systems treat the water and pressure systems ensure the water is there. This kind of dependability is what Six Sigma provides: It treats the processes in a business so that they deliver their intended results reliably and consistently.

The methodology of Six Sigma was first applied in a manufacturing company, but it also works in service and transactional companies (such as banks and hospitals), where it has been implemented many times with great success. Six Sigma dramatically improves the way any process works — whether that process is in the chemical industry, the oil industry, the service industry, the entertainment industry, or any other field.

Management system orientation

Six Sigma is so appealing to managers because it delivers business management results. Managers need to see a return on investment, commitment, accountability, transparency, and a clear path to success. Six Sigma provides all these things.

Clear value proposition and ROI

Six Sigma is characterized by an unwavering focus on business return on investment (ROI). A Six Sigma project can improve a business characteristic by 70 percent or more, stimulating increased operating margins for businesses while increasing the value those businesses provide to their customers. (More on this topic in Chapter 2). Six Sigma initiatives and projects have a direct, measurable financial focus and impact.

Top commitment and accountability

A Six Sigma initiative begins at the top. The leadership and management of an organization must actively commit to the Six Sigma initiative, setting performance goals and developing tactical implementation plans. Management team members must be personally accountable for achieving the performance improvement goals they set for their respective organizations and business units.

Customer focus

Six Sigma, through its *voice of the customer* (VOC) tools (see Chapter 11), drives business processes through customer requirements. No operational, process, and business improvements can occur without a definitive understanding of who the customers are and what they need, want, and are willing to buy. Six Sigma managers become savvy about the needs and requirements of customers in a way that also enables the business to become stronger and more profitable.

Connected business metrics

Six Sigma is different from other performance improvement approaches in its focus on business financials and measurable operational improvements. To support this focus, the Six Sigma management system must include performance measures that are readily accessible and visible to everyone whose actions or decisions determine performance levels and operational quality. You can read about metrics and measures in Parts II and III.

Process orientation

Six Sigma improves the performance of any business or work process — specifically, how those processes effectively and efficiently transform material and other inputs into the desired outputs. This trait is the focal point of using Six Sigma to improve performance: the design, characterization, optimization, and validation of processes. Chapter 7 gives you the lowdown on processes.

The historical perspective

The Six Sigma methodology was formalized in the mid-1980s at Motorola. This organization combined new theories and ideas with basic principles and statistical methods that had existed in the quality engineering domain for decades. These building blocks, enhanced by business and leadership principles, formed the basis of a complete management system. The result was a staggering increase in the levels of quality for several Motorola products, and the inaugural Malcolm Baldrige National Quality Award was bestowed on the company in 1988.

Everyone wanted to know how Motorola had done it. Then-president Robert Galvin chose to share Motorola's Six Sigma secret openly, and by the mid-1990s, corporations like Texas Instruments, Asea Brown Boveri, Allied Signal, and General Electric had begun to reap similar rewards. By 2000, many of the world's top corporations had a Six Sigma initiative underway, and by 2003, over $100 billion in combined savings had been tallied.

By the mid-2000s, Six Sigma became the global standard of quality business practice, embraced by the American Society for Quality. Universities worldwide now offer courses in Six Sigma, and dozens of consulting and software companies have brought Six Sigma products and tools to market. Six Sigma also became equally known by the market designations "Lean Six Sigma" and "Lean Sigma," communicating the benefits of a combined Six Sigma and Lean approach. (For more on these topics, check out *Lean For Dummies* by Natalie Sayer and your trusty coauthor Bruce Williams [Wiley]).

Today, over 2,000 books on Six Sigma are in print, and doing an Internet search for the term *Six Sigma* returns millions of hits. Six Sigma has quite literally become the de facto standard for operations and improvement everywhere in the world.

Project focus

The Six Sigma project is the tool by which processes and systems are characterized and optimized. Program leadership identifies opportunities for Six Sigma improvement projects and assigns Six Sigma specialists to execute them. We provide details about how to select Six Sigma projects in Chapter 5, how to conduct projects in Chapters 6 through 20, and how to manage projects by using technology aids in Part V.

Enabling technology tools

Properly managing a Six Sigma initiative that spans an entire organization or a significant part of an organization requires the ability to simultaneously manage many projects, processes, analyses, data banks, training activities, and people. Generally speaking, several classes of technology tools help accomplish this feat:

- Tools for designing, modeling, managing, and optimizing processes
- Tools for the broadscale and enterprise-level management of multiple projects across multiple organizational units

- Tools for collecting data, conducting analytical calculations, and solving performance problems
- Tools for training, educating, transferring knowledge, and managing knowledge

We provide a comprehensive view of the many Six Sigma technology tools in Part V.

An infrastructure for change

Installing and managing a Six Sigma management system requires a certain infrastructure — an underlying set of mechanisms and structures on which to develop the Six Sigma improvement strategies and enact project implementation and process improvement. The key elements of an effective Six Sigma infrastructure include the following. For more information on setting up this infrastructure, check out our *Six Sigma Workbook For Dummies* (Wiley).

- A fully documented Six Sigma leadership system, strategic focus, and business goal configuration, plus deployment plans, implementation schedules, and activity tracking and reporting techniques. More on these items in Chapter 4.
- A strategy, methodology, and system for training and preparing executives, managers, Champions, Black Belts, Green Belts, Yellow Belts, financial auditors, process owners, and all others involved in the Six Sigma initiative. We define and describe all the Six Sigma job roles in Chapter 4.
- Competency models and compensation plans, Six Sigma participant and leader selection guidelines, position and role descriptions, reporting relationships, and career-advancement policies and plans.
- Guidelines for defining project-savings criteria; aligning accounting categories with Six Sigma goals and metrics; forecasting and validating project savings; and auditing, evaluating, and reporting project ROI.
- Hard criteria for selecting projects, designating project-type categories, developing project problem-definition statements, targeting intended project savings and ROI, approving selected projects, and managing projects through to completion. We give you information about project management in Chapter 5.
- Information-technology-related structures, procedures, and dashboards, as well as tools and systems for designing and managing processes, tracking project and initiative progress, reporting results, storing information and data, and performing analytical functions. We look at these tools in depth in Part V.
- A strategy for consistently communicating the Six Sigma initiative across the enterprise, including an Internet or intranet site that provides a common reference and knowledge base that contains important information, motivational content, recognition stories, educational material, contact information, and so on.

- A management review process for assessing the effectiveness of Six Sigma from the top to the middle to the bottom of the organization:
  - At the top, the focus is on the aggregate process, projects, and results for implementation in entire business units.
  - In the middle, the focus is on the process and results of operational units with multiple Six Sigma projects.
  - At the lower levels, the focus of management review is on making sure individual projects are on track and yielding their intended process-improvement and financial results.

Complete culture change

A Six Sigma initiative often begins with outside consultants providing methods, tools, and training, but over time, the knowledge is internalized and applied organically within the organization. The ultimate goal is for everyone in the organization to have a working ability to understand customers' requirements, collect data, map processes, measure performance, identify risks and opportunities, analyze inputs and outputs, and make continuous improvements. In Chapter 4, we provide more details about culture change.