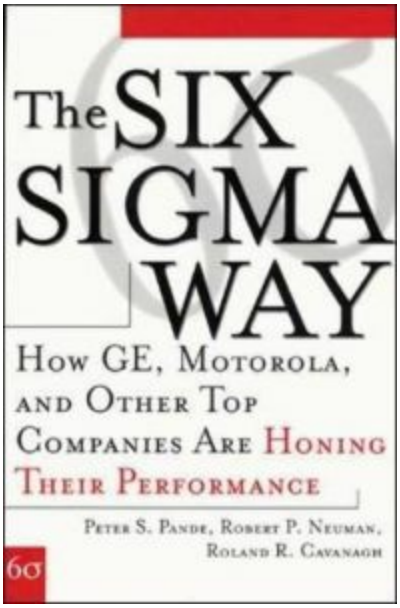

Book The Six Sigma Way

How GE, Motorola, and Other Top Companies Are Honing Their Performance

Peter S. Pande, Robert P. Neuman and Roland R. Cavanagh
McGraw-Hill, 2000

Recommendation

Continual improvement is the key to survival in today's business climate, and as companies like GE and Motorola have proven, Six Sigma is a useful tool for ingraining the quest for perfection in an organization. After reading *The Six Sigma Way,* you'll probably be ready to jump out of your chair and immediately follow in these companies' footsteps by launching a Six Sigma initiative of your own. The authors, three consultants who teach firms to implement Six Sigma efforts, convincingly extol the money-saving and efficiency-enhancing virtues of the holistic approach. This book offers a lot of jargon and complex concepts, but the material is presented in easily understood charts and lists, and there are plenty of concrete examples. *BooksInShort.com* recommends *The Six Sigma Way* to managers who have heard wondrous tales of Six Sigma, but would like a more down-to-earth explanation of how it can be used and the benefits it offers.

Take-Aways

- With Six Sigma, companies focus on customers, improve processes and make decisions based on data instead of opinions.
- Six Sigma strives to provide a perfect product 99.9997 percent of the time.
- A defect occurs whenever a product doesn't meet a customer's expectations.
- A closed-loop system lets a manager adapt to a changing business environment.
- In the Six Sigma closed-loop system, variables like staffing levels directly affect results such as profits and customer satisfaction.
- General Electric, Motorola and AlliedSignal all have successfully used Six Sigma.
- Unlike Total Quality Management, Six Sigma is concrete and comprehensive.
- Six Sigma teaches executives to manage proactively rather than reactively.
- Six Sigma can be applied to service and manufacturing businesses, although the ambiguity of service processes poses a challenge.
- Six Sigma's financial costs include payroll for employees devoted to the effort, training, and any expenses associated with

solutions spawned by the initiative.

Summary

Theory + Common Sense

Companies large and small can improve profitability by practicing the theories of the Six Sigma school. GE head Jack Welch is an adherent to Six Sigma, which combines management theory and common sense to produce a philosophy that focuses on customer needs, improving processes and using facts to make decisions. Six Sigma attempts to create a flexible improvement program that adapts to a company's needs. There's no one correct way to implement a Six Sigma system. Each company is different, with its own unique problems and challenges.

> "In Six Sigma, processes are where the action is. Whether designing products and services, measuring performance, improving efficiency and customer satisfaction - or even running the business - Six Sigma positions the process as the key vehicle of success."

Six Sigma Themes

1. Focus on the customer. Six Sigma success is measured with the customer in mind.
2. Make decisions based on facts. Many management decisions are based on opinions and assumptions. Six Sigma focuses on facts and data.
3. Process is king. Six Sigma requires managers to master processes, such as designing products and measuring performance.
4. Manage proactively. Anticipating events, rather than reacting to them, helps make managers more creative and effective. The reactive approach signals that management isn't in control.
5. Tear down the walls within an organization. Boundary-less collaboration addresses the competition that springs up among different divisions within an organization.
6. Aim for perfection, but tolerate failure. Six Sigma initiatives require companies to take risks, some of which will lead to failure. Fear of failure leads to stagnation. Still, perfection in 99.9997 percent of cases is the goal. Consider this example: If a company sent 300,000 letters, 99% perfection would result in 3,000 mis-deliveries, while 99.9997 percent perfection would result in only one mis-delivery. Perfection means the absence of defects, defined as any event or instance that causes a product to fall below customer needs.

> "As soon as any consultant, guru or author tells you, 'Here's how you have to do it,' we recommend that you politely excuse yourself and leave the room"

Six Sigma Benefits

1. It encourages long-term success. The initiative stresses constant innovation and adaptation to shifting markets.
2. It establishes goals for all employees. The goal is to deliver customers a product that is perfect 99.9997 percent of the time.
3. It enhances customer value. The initiative determines what customers want and how to give it to them.
4. It accelerates the pace of improvement. Because a company's competitors also are striving to improve, the rate of improvement can be a key to profitability.
5. It encourages constant learning by employees. People learn how to evaluate processes, so they can be shifted to different functions in the company and still generate good ideas.
6. It helps companies launch new products and ventures and enter new markets.

General Electric Case Study

GE Chairman Jack Welch says he's obsessed with the Six Sigma approach. Welch launched GE's Six Sigma effort in 1995, not because the company was struggling, but because he wanted to improve an already healthy firm.

> "If you don't know what customers want, it's pretty darned hard to give it to them."

Rising profits are proof that Six Sigma has worked for GE. Operating margins, once stuck at 10%, have jumped to more than 15%. A Six Sigma group working in GE's lighting unit was able to fix billing problems that hampered the company's relationship with Wal-Mart. A Six Sigma team at GE Capital streamlined paperwork, resulting in more quickly completed deals. GE's Medical Systems business used Six Sigma to improve medical scanning technology, leading to full-body scans that take 30 seconds rather than three minutes. GE Capital Mortgage examined practices at a top office and reproduced those practices at other branch offices. As a result, callers reached humans rather than voice mail more frequently, translating to more new business. Six Sigma also taught GE employees about processes, so that they could be moved easily among GE divisions. For instance, a manager could move to GE Capital from GE Plastics with a relatively short acclimation period. GE even tied 40% of manager bonuses to Six Sigma performance.

Motorola Case Study

While GE used Six Sigma to improve a strong company, Motorola adopted Six Sigma strategies to save a dying company. The approach originated in 1987 in Motorola's communications division, headed by George Fisher, who later became CEO of Eastman Kodak. Six Sigma improved Motorola's product quality from poor to near perfect. Employment levels increased, and from 1987 to 1997 sales grew five-fold, the stock price climbed 21% per year and profits grew by 20% per year. Motorola credited $14 billion in savings to Six Sigma efforts.

Closed Loop System

Successful business management requires a closed-loop system, one in which both internal and external feedback, such as profits and customer satisfaction, help a manager correct mistakes. To successfully create a closed-loop system, a manager first must determine which variables (such as quality, staffing or cycle time) have the largest effect on results (such as business efficiency, profits and customer satisfaction). Most companies don't understand the relationship between variables and results, so when things go wrong, they must make major, disruptive adjustments. But in a closed-loop system, the corrections can be seamless.

> "Research has shown that the costs of poor quality (rework, mistakes, abandoned projects, etc.) in service-based businesses and processes typically run as high as 50% of total budget."

W. Edwards Deming introduced the Plan-Do-Check-Act (PDCA) improvement model. Six Sigma's improvement model improves on Deming's approach, by extending it to Define, Measure, Analyze, Improve and Control (DMAIC):

1. Define: Identify a problem and set goals.
2. Measure: Validate the problem and gather data.
3. Analyze: Develop and validate hypotheses.
4. Improve: Test solutions or design new processes.
5. Control: Set standard measures to maintain performance.

Six Sigma vs. TQM

Total Quality Management was the strategic buzzword of the 1980s, but TQM gained a bad reputation due to shortcomings that Six Sigma can overcome.

- TQM failed to integrate decision making among layers of a bureaucracy and among different departments. Six Sigma seeks to integrate quality-improvement processes, and Six Sigma performance even can be tied to management bonuses.
- TQM has been met with apathy from top management at some companies, but Six Sigma has been embraced by the heads of companies such as GE and AlliedSignal.
- TQM can be vague, but Six Sigma is a well-defined system for focusing on customers, improving processes and using data to make decisions.
- TQM suffered from unclear goal setting and created an open-loop system, in which today's solutions might not work when the business environment changes tomorrow. Six Sigma has a clear goal of 99.9997 percent perfection, and it creates a closed-loop system for adjusting to change.

- TQM focuses on product quality, to the exclusion of logistics, marketing and other key functions. Six Sigma targets all business processes.

Six Sigma in Service

Quality improvement strategies typically translate better to manufacturing businesses than companies in the service sector. But companies in finance, sales, marketing, logistics or retail can benefit from Six Sigma. Mistakes in service businesses can eat up half a firm's budget, compared to 20% or less in manufacturing businesses. Yet there are many challenges to improving processes in service companies:

1. Work processes are invisible. Work takes place in cyberspace or in employees' heads. Service workers often say they have no process. They do, it's just difficult to recognize.
2. Small changes have big ramifications. Because service-based processes aren't well defined, seemingly small changes can have huge and unexpected results.
3. It's a new area. In manufacturing, the notion of quality improvement has been around for a long time. In the service industry, process measurement and improvement is uncommon, although not unheard of.
4. Lack of hard data. The numbers relating to service processes often are thin, and it can be difficult to track variables and results.

   "Fortunately, many of the problems in a service environment - especially in the early stages of a Six Sigma effort - can be solved, with terrific results, with only occasional need for advanced statistics."

There are ways to overcome those challenges, however. Here are some tips for applying Six Sigma to a service business:

1. Examine the process. Although the work process might seem invisible, shining a light on the service process can illuminate problems.
2. Don't act hastily. An overly general and poorly defined initiative will fail. Take time to define the problem and pick targets.
3. Use data. This is difficult, because service processes often are too vague to lend themselves to numbers. Still, a manager must find a way to define and measure subjective areas.
4. Don't rely on statistics too heavily. Because service businesses are ambiguous, using too many statistics can be self-defeating. Still, many improvements can be made without detailed statistics.

Six Sigma in Action

While every company's needs are different, any firm can benefit from these guidelines for Six Sigma implementation:

1. Define core processes and key customers. View the big picture. What are the core processes, those that deliver products and services to customers?
2. Identify customer needs. Surprisingly, many companies ignore customer needs out of ignorance or arrogance.
3. Measure performance. Create a measurement infrastructure that lets you follow changes over time. Use this knowledge to set priorities and focus resources.
4. Prioritize, analyze and implement. Don't overload your company with overly ambitious changes. Instead, pick well-defined goals that can be achieved.
5. Expand and integrate. Six Sigma is a long-term process that starts with a few small steps and continues indefinitely.

Six Sigma Costs

Not every company needs a Six Sigma effort. For instance, a firm that already formally measures performance and encourages improvement might find that a Six Sigma program is counterproductive. Also, a company already undergoing stressful changes might have too much turmoil to launch another time-consuming effort. Finally, a firm that can't financially afford a Six Sigma effort is a poor candidate. Before embarking on a Six Sigma program, a company must determine whether it has cash available to devote to the initiative.

About the Authors

Peter S. Pande is president of Pivotal Resources, a consulting firm that has helped companies such as Citicorp and Chevron implement Six Sigma systems. **Robert P. Neuman** is a consultant and speaker in the area of Six Sigma methods. **Roland R. Cavanagh** is a professional engineer who has worked with companies such as America West Airlines, Commonwealth Edison and Tencor Instruments. All three authors also have done consulting work with GE and all live in California.