

CHAPTER 1

Why Has My Company Adopted Six Sigma?

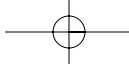
What Can Six Sigma Do for You?

“Six Sigma is Greek to me.”

—An Employee who just heard his company has started a Six Sigma initiative.

So your company has just announced they have begun a Six Sigma quality initiative. You might be an experienced worker who has been through a quality initiative in the past. In all likelihood that experience was a bad one where you felt the time and money was wasted and negatively impacted your work life. Or you might be a new employee who wants to know what the excitement is all about.

You might have heard or read about Six Sigma in the newspaper as organization after organization has begun to adopt and implement this powerful management philosophy. What we want to do in this book is take away the mysticism of Six Sigma. In this first chapter, we answer your basic questions about Six Sigma. We



provide you with a user-friendly definition of Six Sigma. We give you a brief history of Six Sigma and then explain why Six Sigma is different from other quality initiatives. We discuss what Six Sigma is going to do for your company and then complete the chapter with a discussion of what Six Sigma is going to do for you.

A Beginning Definition of Six Sigma

Companies exist to be profitable. Profitable companies provide jobs and pay taxes that benefit the community, state, and country where they make their products or provide their services. Making a profit is based on having customers who want your product or service. Wanting your product or service is just the beginning. Every customer has requirements regarding the product or service. Think of your most recent experience where you exchanged money for some product or service. Maybe that experience was ordering lunch at a fast food restaurant. You decide to use the drive-thru and order a cheeseburger, french fries, and a large Coke.

First, you get into a line of other cars where it takes almost 10 minutes to get to the order menu. When you place your order, you can hardly hear the order person through the speaker provided. You next drive your car around the drive-thru, pay your money to a person who, without a word or a smile, hands you a bag containing your order. You drive away, sticking your hand into the bag and pulling out a fry, hoping for a crisp, hot, salted snack on the way back to work. Instead, the fries are soggy and lukewarm. As you pull into your company's parking lot, you decide to play some music and eat your cheeseburger. Rather than the cheeseburger you ordered, you pull out a regular burger. You eat it anyway because you are hungry but decide the next time you will choose another place instead.

Your lunch experience shows that your customer satisfaction is more than just the exchange of a product or service for a fee. You exchanged your money for the product offered by the fast food restaurant but you were not happy. Your unhappiness was based on the restaurant not meeting your *requirements*. Requirements are those characteristics about your experience that determine whether you are happy or not. In this case, you probably had requirements

Why Has My Company Adopted Six Sigma?

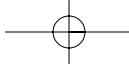
3

about the accuracy of your order, the crispness and freshness of your french fries, and the time it took for your order to be filled. You might even have had a requirement about the courtesy of the person who handled your order. In this example, the restaurant did not meet your requirements.

In our fast food example, you didn't complain when your requirements weren't met. Instead you made the decision to take your business elsewhere. Think about the customers of your business. Are they happy with your products or services? Every business exists because it has customers. Every customer has a set of requirements. If you are meeting their requirements, you are being *effective*. If their requirements are not being met you are being *ineffective*. If you are ineffective and do nothing about it, soon you will be out of business.

Effectiveness through meeting (and preferably exceeding) requirements is only half the battle. Let's return to our fast food example for a moment. Let's suppose our fast food restaurant is committed to customer satisfaction. Suppose they widely advertise that if there is any customer dissatisfaction they will immediately replace the order free of charge and even deliver a new meal to wherever you are. Replacing your order and delivering it free to you would certainly increase customer satisfaction and make the restaurant a more effective organization. However, focusing merely on customer effectiveness would eventually mean they could go out of business. Why? Because to be a profitable business, an organization must also be *efficient*. Efficiency relates to the amount of resources consumed in being effective. Efficiency can be measured in time, cost, labor, or value. Thus, if the fast food restaurant has to hire more people as drivers, hire more people to cook burgers for a second or third time for the same customer, and pay for the materials to make these free burgers, they quickly will recognize that the cost of being totally focused on effectiveness without efficiency will result in an unprofitable situation. Since businesses exist to make a profit, being focused on the customer without also being focused on efficiency will not be a good business decision.

Six Sigma, at its basic level, is attempting to improve both *effectiveness and efficiency* at the same time. Again, let's return to our fast food restaurant. We have all seen the fast food restaurant



with the golden arches that publicizes “Millions served.” This concept of millions served will help us understand the basic concept of Six Sigma.

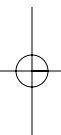
A technical measure of how many unhappy customer experiences per million opportunities is the concept behind *Six Sigma*. For example, if on any day McDonald’s served one million customers, how many of them experienced what you did during your lunch experience? If only three (yes, three) customers were unhappy with their experience, then McDonald’s achieved Six Sigma on that day. This is because Six Sigma is equivalent to only 3.4 bad customer experiences for every million opportunities.

Of course, do you think only 3.4 bad customer experiences at McDonalds occurred today? If 233 bad customer experiences occurred per million McDonald’s customers then McDonald’s would be a Five Sigma company. If 6,210 customers had experienced soggy french fries or an inaccurate order then McDonald’s would be a Four Sigma company. If 66,807 McDonald’s customers opened their lunch bag and found a Big Mac when they had ordered a Quarter Pounder, McDonald’s would be a Three Sigma company.

Six Sigma is a measure of customer satisfaction that is near perfection. Most companies are at the two to three sigma level of performance—that means between 308,538 and 66,807 customer dissatisfaction occurrences per million customer contacts.

Companies that have a two to three sigma level of performance experience business problems. They don’t make as much money as they should for their shareholders. Shareholders get mad and begin to take their money elsewhere. Management wants to increase profitability. They fear for their jobs and want to improve the “bottom line.” Often, they think too much in the short term and begin to lay off employees. In the short term, the bottom line looks improved. Of course, the emphasis here is on the short term. With less people in the organization, there is more work for those who remain.

What management forgets by “downsizing” is that if they run a business that is neither effective nor efficient, things will only get worse with less people expected to work harder. Ultimately, businesses that operate by focusing on short-term profitability will result in long-term unprofitability.



Why Has My Company Adopted Six Sigma?

5

In many companies, management believes that downsizing is a way to improve profitability. Since the 1980s, there have been attempts to change that approach. During the 1980s, some management improved profitability through downsizing. For example, the early 1980s showed an interest in Japanese manufacturing techniques. Some U.S. manufacturers mimicked these techniques. The early 1980s were marked by efforts like Statistical Process Control or Just in Time Manufacturing. While well intentioned, many of these efforts were ill fated from the beginning. Management attempted to use these efforts in the same way they used downsizing. That is, they attempted to use them as cost savings measures. The workforce saw these efforts for what they were, attempts to get more work out of less workers. This was particularly the case when these quality efforts were combined with downsizing. In addition, management only attempted to implement these initiatives as programs. What this meant was that the focus was almost exclusively on the tactics of improvement at the worker level with virtually no work done by management itself. For a company to truly become effective and efficient, it was necessary for a quality initiative to have a focus on changing how executives managed their business.

Six Sigma was started in the mid-1980s. Here was a quality initiative that had a significant role for management in its implementation. Started at Motorola but popularized in the 1990s by AlliedSignal and General Electric, Six Sigma was different than previous approaches to quality improvement.

With other quality approaches, management played little if any role other than approval of bringing in external consultants to train the workforce. With Six Sigma, the work begins with management. First, executives create the Process Management system. Before work is done that affects the average worker, management has already spent several months working on identifying and measuring the processes of their organization.

A *process* is defined as the series of steps and activities that take inputs provided by suppliers, add value and provide outputs for their customers. Six Sigma as a management philosophy instructs management to begin identifying the 20 or 30 most important processes in their business. Next management measures the current sigma performance of each of these processes. Many, if

not all, of the processes will be operating at two to three sigma performance. Some processes may even be lower than two sigma. Once management has identified their processes and personally been involved in measurement of their current performance, they then identify the lowest performing processes that have the most direct impact on the company's business objectives. *Business objectives* are the five to seven most important goals a company establishes each year. Sometimes they are financially stated (like profits) but there are others like customer satisfaction or employee satisfaction.

Once the processes having the worst performance with the greatest impact to the business objectives are identified, project teams are formed. That's where the individual worker comes in. They will become part of a five to seven person team that will have the responsibility of improving the performance of the worst performing processes. These teams usually exist for four to six months. They are taught a series of tools and concepts (that we will cover in later chapters) to help them use their skills to improve sigma performance to achieve greater effectiveness and efficiency.

The History of Six Sigma

Motorola is where Six Sigma began. A highly skilled, confident, and trained engineer who knew statistics, Mikel Harry began to study the variations in the various processes within Motorola. He soon began to see that too much variation in any process resulted in poor customer satisfaction and ineffectiveness in meeting the customer requirements. While the concept of variation can be expressed statistically, it doesn't have to be complicated. Again, think of your lunch buying experience. Let's go back to our fast food restaurant where you are the customer. What if over the course of going there for lunch five days in a row, you experience the following waits in the drive-thru line measured in minutes from the time you join the line until you get your order filled:

- Monday (14 minutes),
- Tuesday (12 minutes),
- Wednesday (2 minutes),

Why Has My Company Adopted Six Sigma?

7

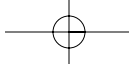
- Thursday (24 minutes), and
- Friday (8 minutes).

The average wait in line for lunch this week is 12 minutes, (by the way, have you ever considered brown bagging it?). Yet, to say that you will typically wait 12 minutes in line doesn't describe the real situation. On Wednesday you waited only 2 minutes and on the very next day you waited 24 minutes. As my good friend and colleague Dave Schulenberg says, "Customers feel variation, not averages." Not having control over variation, this fast food restaurant is going to lose business, since you don't like the uncertainty of not knowing whether it is going to be a 2-minute wait or a 24-minute wait.

Mikel Harry recognized the importance of measuring variations in the various processes of Motorola. However, unlike other quality efforts that spent most time on measurement, Harry and others at Motorola acted on what processes produced the most variation. They applied a complete set of tools to reduce and control the variation in the poorly performing processes and greatly improved the effectiveness and efficiency of those processes. Not only did they improve those processes, they actively engaged their Chief Executive Officer, Bob Galvin, in their work. Soon, Galvin began to manage the variations in all of Motorola's processes and made Six Sigma the management philosophy in all he did.

In 1992, I was fortunate to hear Bob Galvin give a speech at the Juran Institute. While I was giving a speech on supplier management, I made sure to hear his keynote speech since I had spent time in the late 1980s working with several Motorola suppliers helping them begin to implement Six Sigma, albeit on a smaller scale than Motorola itself. After hearing that early November 1992 speech, I knew Six Sigma was going to be different. Never in my years of consulting had I observed an executive talking about a quality initiative. In the past, it was always other quality professionals talking about the craft of improvement, complaining accurately about the lack of management support.

If only other executives could have the passion of Bob Galvin, I thought that night. If only they could possess the type of commitment and involvement that Galvin was showing at Motorola, Six Sigma could become a true management revolution,



moving management away from thinking of downsizing as their only approach to improving the bottom line.

I didn't have to wait long. At about the same time I was listening to Bob Galvin, he was having a series of private meetings with a man named Lawrence Bossidy. Bossidy had left General Electric in 1991 to take over a large conglomerate called AlliedSignal. Impatient but brilliant, he knew he wanted to make a major change in a once stalwart company that had fallen on hard times. Schooled by Jack Welch at General Electric, he wanted to place his own stamp on management at AlliedSignal and soon was in discussions with Bob Galvin about how he had helped Motorola improve their business performance.

Within months, Bossidy had generated significant improvements with Six Sigma, both improving effectiveness and efficiency through focusing on customer measures of effectiveness and generating greater efficiencies through both managing processes and chartering Six Sigma teams to improve performance. Within three years, AlliedSignal was saving literally millions of dollars and improving their reputation with customers while not resorting to cost cutting through downsizing or lay-offs.

Bossidy remained in close contact with his former mentor Jack Welch. Avid golfers, it was during a round of golf in early 1995 that Welch both complimented and inquired into Bossidy's turnaround at AlliedSignal. Always the competitor, Welch was intrigued by Bossidy's endorsement of Six Sigma and finally asked AlliedSignal to provide an overview of this management philosophy at his management training campus in Crotonville. With much anticipation, Bossidy relished the thought of returning to General Electric with a message of how he had changed an organization.

The summer meeting at Crotonville went well, with the General Electric audience encouraged by and complimentary toward this approach that AlliedSignal had used since the early 1990s. One problem was Welch's absence from the daylong session, though his absence was well excused. Welch had just gone through heart surgery and was recuperating at home. It wasn't long after his return that the buzz from the AlliedSignal meeting on Six Sigma made him a convert.

Why Has My Company Adopted Six Sigma?

9

By the end of 1995, General Electric had decided to make Six Sigma a corporate-wide initiative. In his 20 years at the helm of General Electric, Welch claims to have had only three corporate-wide initiatives.¹ Again, like at Motorola and AlliedSignal, General Electric decided to make Six Sigma different than other programs that had been associated with quality. Six Sigma would have both the formal support and active involvement of management. It would be the way a company manages their business, not something to be foisted on the workforce as something extra to be done after they worked long hours making up for all the work left by those who had been laid off during downsizing.

As successful as Motorola and AlliedSignal were in their implementation of Six Sigma, General Electric is the organization that used Six Sigma most impressively to drive improvement in effectiveness and efficiency. In his autobiography, *Straight from the Gut*, Jack Welch described multiple successes that were generated through the application of Six Sigma. GE Plastics had wanted to obtain Sony's business for Lexan polycarbonates in the making of CD-ROMs and CDs. However, purity standards were very high, and General Electric was operating only at a 3.8 sigma level. After applying Six Sigma improvement methods, they went to a 5.7 sigma level and earned Sony's business.²

At GE Power Systems, rotors were cracking due to high vibration. A third of the 37 operating units had to have rotors replaced due to the high level of poor performance. Through application of Six Sigma methods, vibrations were reduced by 300 percent and, at the time of publication of Jack Welch's book, there had been no replacement of rotors.³

At General Electric Capital (where I did most of my General Electric Six Sigma consulting), customer response time dramatically improved in the mortgage business. At one point, getting a customer representative by phone averaged only 75 percent. After applying Six Sigma methods, this improved to over 99 percent.

¹Jack, *Straight from the Gut*, Author Jack Welch with John A. Byrne, Warner Brothers Books, 2001.

²Ibid.

³Ibid.

Less than two years after the initial application of Six Sigma, General Electric had generated over \$320 million in cost savings. By 1998, it had generated three quarters of a billion dollars in cost savings and anticipated over a billion dollars of cost savings by 1999.

What Can Six Sigma Do for Your Company and You?

In the past five years, literally hundreds of organizations have indicated their interest in making Six Sigma their management philosophy of choice. Of course, when anything becomes as popular as Six Sigma has become, problems can occur. Executives in many organizations who have a slash-and-burn mentality (quick profits through downsizing, remember them?) may now be trying to use Six Sigma in the same way. The *Wall Street Journal* has two or three articles on Six Sigma every week. While many of the businesses attempting to implement Six Sigma are well intentioned and want to implement Six Sigma properly just as General Electric did, there are also those impatient executives who now look on Six Sigma in the same way as they look on downsizing. This quick-fix approach to Six Sigma is a sure path to the same short-term results that hamper the organization in the long term.

There are a host of statisticians who now have printed business cards who claim they are Six Sigma consultants. Unfortunately, these consultants often only contribute to making the kind of bureaucracy that has a negative impact on effectiveness and efficiency.

Hopefully, your executives have made the right decision in hiring consultants who will help them implement this cutting edge management philosophy. By committing to Six Sigma, your management is displaying an enlightened attitude.

If they have, congratulate your management for being enlightened. What they have done by committing to Six Sigma is attempt to do several things. First, successful implementation of Six Sigma will result in improved effectiveness and efficiency in the first "wave" of projects in the first six to nine months of implementation. Of the 20 to 30 processes in an organization, usually 7 to 10 will be part of the first implementation efforts. Of those 7 to 10 projects, 4 to 7 will probably be successful. These first projects will help generate increased enthusiasm and momentum for future

Why Has My Company Adopted Six Sigma?

11

Six Sigma activity within your company. We discuss in later chapters what your role will be whether in these first projects or in later projects.

In later months and years of Six Sigma implementation, you will notice other changes as well. First, while your reporting relationship within the organization may not change, you will be introduced to a group known as *process owners*. Process Owners are responsible for the management of processes within the organization. While the organization chart doesn't change, process owners take on informal responsibilities for the management of cross-functional, interdepartmental processes. These process owners may sponsor a team that is responsible for improving effectiveness and efficiency. These team sponsors are called *project champions*.

Your company is pursuing Six Sigma to change the way it does business. To their credit, your management team is trying to change the way it manages. They probably recognize the folly of previous attempts to increase profitability through downsizing. They believe that greater effectiveness and efficiency will bring improved profitability. Improved profitability means business growth. Growth means more jobs, not less. Increased growth can mean increased stock price that will benefit the executives and those who report to them as well as all other stakeholders.

Greater effectiveness and efficiency will mean a lot to you. First, it will mean greater job security. Second, it will mean learning new skills. These new skills will mean greater opportunities such as promotions in your current company. You may decide to take your new skills and market them to other companies. Even if you stay in your current job, you will find these new skills helpful. You will find using the tools of Six Sigma makes your job easier to do. Plus, working in processes that are effective and efficient means less stress and greater job enjoyment.

How This Book Is Written

The following chapters are written with you, the individual contributor, in mind. In Chapter 2, we expand the discussion started in this chapter and explain the strategic element of Six Sigma that is called *Business Process Management*. First, we describe what

management has done to create Six Sigma as a true management philosophy in your company. This means using it as a strategic weapon. The *strategy* of Six Sigma is called *Business Process Management*. We address this strategy and provide an example.

In Chapter 3, we focus on the *tactics* of Six Sigma. In your role as an individual contributor, it will be likely that at some point in your professional life you will be put on a Six Sigma team. You will need to know what being on a team will mean to you. We will take you through the tactics of Six Sigma and give you practical ideas of what will be expected of you and what you can expect of others.

In Chapter 3, we spend more time on what will happen to you once you are on a Six Sigma team. Chapter 3 discusses the roles and responsibilities of a Six Sigma team and where you fit in. We take you through a high-level discussion of process improvement using a methodology of Defining, Measuring, Analyzing, Improving, and Controlling a process. Known by its initials DMAIC, we take you through this all-important methodology.

Chapter 4 focuses on the 10 basic tools you need to succeed on a project team. We do not cover the tools with statistical sophistication. Instead we discuss their importance to you and focus on what you need to use the quality tool properly. Among the tools we cover in Chapter 4 is the Customer Requirements Tree. This will help you determine what the customer's requirements are that ultimately lead to measures of effectiveness.

In Chapter 5, we address what will happen to your organization once Six Sigma becomes a true management philosophy. This cultural component is the key to making Six Sigma more than just a cost savings initiative. We discuss how an organization's systems and structures must change to embrace Six Sigma as a true cultural phenomenon through the use of 10 "soft" tools.

In Chapter 6, we discuss the 10 most common questions about Six Sigma and more importantly share with you the kind of answers that will strengthen your belief in Six Sigma.

Summary

Six Sigma is a popular management philosophy that is sweeping the globe. Its goal is to make an organization more effective and



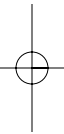
Why Has My Company Adopted Six Sigma?

13

efficient. Effectiveness is the degree to which an organization meets and exceeds the needs and requirements of its customers. Efficiency is the resources consumed in achieving effectiveness.

Six Sigma is equivalent to no more than 3.4 bad customer experiences for every million customer opportunities. Most organizations operate at between Two to Three Sigma performance, which at best is nearly 70,000 bad customer experiences per million customer opportunities.

Six Sigma originated in the 1980s at Motorola. In the early 1990s, it migrated to AlliedSignal and in the mid-1990s, General Electric adopted it as their premier management philosophy.



KEY LEARNINGS

- Six Sigma is a management philosophy attempting to improve effectiveness and efficiency.
- Effectiveness is the degree to which an organization meets and exceeds the needs and requirements of their customers.
- Efficiency refers to the resources consumed in obtaining customer effectiveness.
- Efficiency usually refers to the time, cost, labor, or value involved in being effective.
- Six Sigma was first developed at Motorola.
- AlliedSignal was the second organization to be involved with Six Sigma.
- General Electric is the organization that made Six Sigma the most successful management philosophy in history.
- Unlike other quality initiatives that focused just on tools, Six Sigma is based on the active involvement it generates from management.
- Results from Six Sigma have not been paralleled by any other quality initiative.