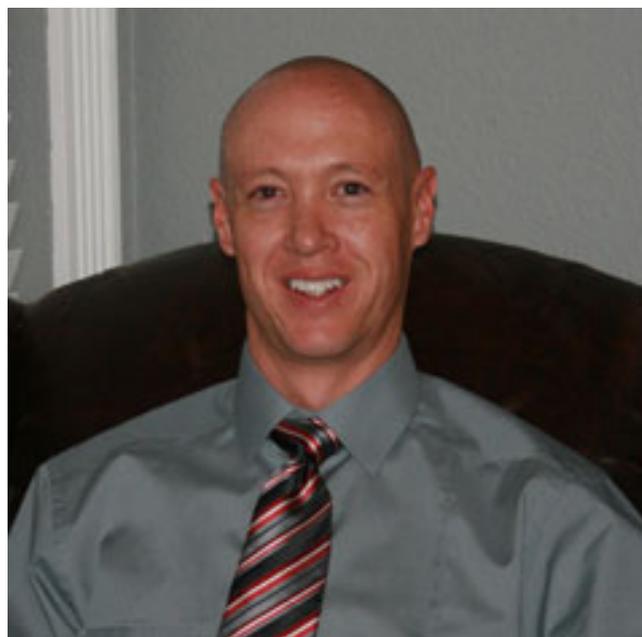


Should I Adopt Six Sigma?

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We hear conflicting tales of the successes and failures of Six Sigma. Most of the explanations of Six Sigma describe its philosophic ideal. Here, I offer what I believe to be a more pragmatic, common-sense explanation of how Six Sigma does and doesn't work.

The Rest of the Story

Several times in the last few months I've been asked, "Is Six Sigma dead?" Hype for the program seems overcome by tales of failed deployments. At the same time, I've talked with a number of colleagues and recruiters seeking Six Sigma expertise to drive deployment in businesses.

I don't believe that Six Sigma is dead, but business leaders are certainly skeptical about it. We hear tales and hype about it, mostly from consultants, describing incredible business benefits. At the same time, we hear tales through the grape vine of enormous investments in failed deployments and about how it simply doesn't work.

What should a business leader believe if he or she is looking for ways of improving business performance and wants to know if Six Sigma is a viable answer? The truth is that both the consultants' hype and the grape vine naysayers are correct. It does work very well when done right, but it can also be an expensive failure if done wrong.

To help make a decision, I offer a pragmatic look at what Six Sigma does to help one decide if it is a solution to business performance needs and a brief explanation

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of what makes or breaks a deployment. I hope that this explanation will be helpful.

What is Six Sigma? Six Sigma is, in short, a business decision-making philosophy; simple as that. It uses statistical methods to help make wise decisions. Its purpose or goal is to eliminate wasted energy, time, and resources managing production and business processes that are out of control.

The enemy of Six Sigma is variation. The statistical methods are used to measure and quantify the variability of production processes as well as business processes and reduce that variation to the point where the processes and, therefore, the business performances become highly predictable and stable.

When everything in a business is highly predictable, it takes much less manpower, time, and money to keep everything running smoothly. When we can mathematically perceive the probability of success of two options, we can make wiser, generally more successful, business decisions and we make fewer errors and experience fewer failed efforts.

Let's look at a couple of simple examples. We'll examine one that explains the benefits of predictability and two others that describe how statistically driven decisions might be made.

Let's imagine a product development and manufacturing business. Now, consider the highest-level look at business variation, the basic business inputs and outputs themselves, demand and supply.

Chances are that the orders for the business' products are different from month-to-month or even one week to the next. It can be difficult to know how many of each product line a business should be prepared to build when the demand is always changing. A natural response is to carry an inventory buffer to cover the spikes, but inventory ties up cash and in some regions can invite significant tax penalties.

Also, the production of the products will vary from week to week or between months. When a high demand month is coupled with a low production month, the whole business can whip into a frenzy trying to make the two match up. People work overtime to solve production problems and the supply chain expedites material to either get enough in house to meet demands, to engage additional production resources, or to hasten late deliveries.

All of this expediting and overtime problem solving costs a great deal of money. By the way, because the business didn't anticipate the frenzy, the budget isn't prepared to handle the sudden expenses and the business might resort to borrowing cash to cover the spike in costs. Alternatively, a business might hold cash in reserve to cover these spikes when they happen.

Debt or cash reserves can hamper business performance. Debt diminishes a business's credit rating (or the stock value if publically traded) and cash reserves obviously choke cash flow, restricting the potential growth or throughput of the business.

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If this sounds at all familiar, then perhaps Six Sigma is a viable answer. Even statistical predictions aren't perfect, but imagine being able to predict demand within a reasonable range, and identify trends or patterns of seasonal performance.

With such a prediction, the business can anticipate how much production is needed for a given month and engage the supply chain and production resources appropriately. Also, it can know when it is appropriate to build inventory, knowing that the inventory will be consumed and won't sit for months (or years).

Now, imagine that the variation in production performance can be reduced such that the difference in product from one day to the next can be counted on one hand. Given enough time and focus, such can be achieved, even in high-volume operations.

With extreme control of process variation, the production processes can be managed to predictably match up with anticipated demand and the difference between the two is minimal to none. There's no scramble, no overtime, and no expediting. Things are smooth.

The business no longer needs short loans to handle unexpected spikes and can operate debt free if it chooses. Cash reserves can be turned into investments in growth. The business bottom line looks good and competitors struggle to match operating costs and, therefore, prices.

Six Sigma is capable of achieving the utopia described when it is deployed and executed correctly. I've witnessed it. It achieves it through a disciplined and skilled approach to identifying the root cause of problems and of variation and eliminating them.

Six Sigma also enables better business decisions. Let's look at how business decisions are often made and how they might be made differently using Six Sigma's statistical approach.

Imagine a basic market study or product comparison. Say that a business is comparing a prototype against a competitor product to see if the new product concept will capture market share and to get comments to use to refine the offering.

Some marketing and sales folks set up a booth at the mall and invite random shoppers to try out both products. The next day, the study team reports that the prototype was preferred over the competitor's product. Should the business finalize development and go into production?

Let's pretend that the obvious question is asked and the program manager requests the numbers. Suppose that 70 people participated and 39 of them prefer the prototype. Hurray, the prototype wins! The concept must be a market winner right? Let's run with it.

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Let's stop and think about it a little more. The chances of 70 people splitting exactly down the middle 35 to 35 are fairly small. Given a choice of A or B, one was almost certainly going to be preferred. If only 4 people had decided differently, the prototype would have lost the battle (a tie is as good as a loss when trying to take market share).

Is it possible that if 70 different people in the same mall on a different day were sampled, that 4 of them might decide differently? It's very likely. It's identical to making the business decision to invest in product development and enter production with a coin toss, except the coin toss costs less than the market study.

Would you bet your business on the numbers above? People do it all the time. Statistical analysis of samples can tell us if we should consider the results to be distinctly different, or if the difference is within the realm of random chance and that we should consider them basically equal (a coin toss).

Let's consider product testing. Let's imagine two different products undergoing the same test. It may be two designs from the same business that is trying to decide which one to put into production, or it may be testing a new product against a competitor. We'll choose a simple characteristic such as strength, just for discussion sake.

First, one of each product is tested. Product A turns out to be stronger than product B. Would you bet your business decision on the result? Testing is expensive and time consuming. Often businesses test one and call the testing done.

Consider this. Will every sample of product A fail at exactly the same point? If it's a single piece of homogeneous material, the difference might be insignificant, but if it's a complex system or structure, the variation could be huge. What if the one piece of A that was tested was stronger than average and the one piece of B was weaker than average. Did the test results of one of each really tell the truth about what to expect?

Let's say that 10 of each are tested and the average is considered. Suppose that the average of B is stronger than the average of A. Good thing we didn't run with the test results of just one of each, right? Yes, but there's more.

Suppose that the difference between the averages is relatively small, or better yet, it's very noticeable, but both averages meet the performance requirement. I often say that looking at the average is like looking at a grey zebra. Stand it next to a [donkey] and you'll be hard pressed to tell which is which.

Suppose that all of the numbers for A are very close to the average number and all of them are within acceptable performance limits, but the numbers for B are spread out all over the place with some below specification and some so high the test was suspended before failure.

Which product is least likely to generate customer complaints, failures, or customer returns? Obviously, product A is going to be the most stable and predictably above

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the minimum performance standard. Statistical analyses of the samples can tell us the probability of either A or B causing a defect or dissatisfied customer.

Wouldn't you like to know before you launch a product what the defect rate is going to be? Better yet, wouldn't it be nice to know that your defect rate will be very small, or none, before you sell the first product? Wouldn't you like to know, before you start development, what the probability of success of the product is?

Hopefully the above examples provide a common-sense perspective of how the Six Sigma methodology can drive business performance by minimizing variation and improving predictability of performance, and how it can help us make better business decisions, with less risk. I deliberately refrained from explaining the mathematical meaning of six "Sigmas" and the philosophic ideal represented because I feel that such does not really help us determine if it is something we need.

Let's discuss briefly, the difference between success and failure of Six Sigma deployments. It's a very important thing to understand before deciding to jump in.

The foundation of the Six Sigma methodology is an understanding that variation is the root of waste and pain inside a business and that the goal is to identify and eliminate variation everywhere *practical*. The means of understanding variation are rooted in statistics, and the means of eliminating variation are rooted in a disciplined problem-solving approach.

Based on that, in order for Six Sigma to work, everyone in the business must accept the tenant that variation is the enemy and become proficient with the problem-solving approach and the statistical methods most applicable to their roles inside the business. Successful Six Sigma is an all-or-nothing proposition; either everyone's in or it doesn't take.

Not everyone needs to become a statistical expert, but everyone will need some basic understanding and some appropriate tools. Production floor personnel need to understand how to identify and eliminate variation in their own activities. Business leaders will need to be able to digest statistical analyses and adopt the behaviors of doing so. Of course, you will need to have some experts inside the business, either the managers become so, or you must have an independent task force (I recommend the former).

The all-or-nothing challenge is the principle reason deployments fail. Businesses fail to engage the entire population and drive a comprehensive change in behavior. Businesses fail to break through "lip service" and achieve true adoption of the beliefs and use of the skills. For this reason, top-down, tyrannical "join me or die" deployment plans are often the most successful.

It is possible for a complete business unit within a large conglomerate or corporation to adopt Six Sigma if given the freedom to do so. Because of interdependencies, it is very difficult for a single function or team to adopt it alone, within a business unit.

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A second cause for Six Sigma's failure surrounds the word I italicized above: *practical*. Sometimes organizations that do become culturally saturated with Six Sigma experience failure because they become so focused on the ideal state, they forget the overall business purpose: optimizing performance and saving money. Sometimes it costs more to reduce variation than the variation itself costs. At such a point the quest to eliminate variation becomes an expense, not a save.

Years ago I worked inside of one of the corporate Six Sigma success examples, at a particular business unit that to this day has not truly adopted the Six Sigma methodology, in spite of the top-down dictum, and perhaps rightly so. The organization was, and is, a custom engineering service.

Quantities of output might be as few as one or as many as around 18. Variation in output was not a big deal. It simply isn't practical for such an organization to use statistical methods on the overall output, though it did make very good use of the problem solving approach to address numerous business process and performance issues.

Six Sigma is every bit as powerful as the consultants and experts claim. It is also a costly investment failure if the cultural change to successfully adopt it is not achieved. It is my hope that the explanation and examples above help clarify the muddy mix of success and disaster stories as well as the idealistic or philosophic descriptions of Six Sigma that seem to be the norm.

Consider the information above carefully in your contemplation of adopting Six Sigma. If your business frequently scrambles to deal with spikes, expedites orders or deliveries, or production is unpredictable then Six Sigma might be a good solution. If business decisions are hit or miss, Six Sigma might be a good choice.

Do not adopt Six Sigma just because others have succeeded. Adopt it because you need to wage war on variation. If you do decide to adopt Six Sigma, move forward with complete conviction and remain mindful of the business objective of optimizing and saving.

Stay wise, friends.

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