

Implementing Six Sigma - Part I

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In recent years there has been much interest in the application of Six Sigma techniques to process improvement. CEO's are hearing about the monetary benefits that others have achieved through Six Sigma and are ready to cash-in on the benefits offered by the techniques within their organizations.

General Electric (GE) CEO Jack Welch describes Six Sigma as "the most challenging and potentially rewarding initiative we have ever undertaken at General Electric" (Lowe 1998). The GE 1998 annual report states: "more than three quarters of a billion dollars in savings beyond our investment (in Six Sigma quality) with a billion and a half in sight for 1999." However, everybody has not been so enthusiastic --- there have been failures too.

Consider the illustrations sited in a *USA Today* article (Jones 1998):

- " After four weeks of classes over four months, you'll emerge a Six Sigma "black belt." And if you're an average black belt, proponents say you'll find ways to save \$1 million each year."
- " ... nobody gets promoted to an executive position at GE without Six Sigma training. All white-collar professionals must have started training by January. GE says it will mean \$10 billion to \$15 billion in increased annual revenue and cost savings by 2000 when Welch retires."
- " It will keep the company (AlliedSignal) from having to build an \$85 million plant to fill increasing demand for caperolactan used to make nylon, a total savings of \$30-\$50 million a year."
- "Lockheed Martin used to spend average of 200 work-hours trying to get a part that covers the landing gear to fit. For years employees had brainstorming sessions, which resulted in seemingly logical solutions. None worked. The statistical discipline of Six Sigma discovered a part that deviated by one-thousandth of an inch. Now corrected, the company saves \$14,000 a jet."
- "Lockheed Martin took a stab at Six Sigma in the early 1990s, but the attempt so foundered that it now calls its trainees "program managers," instead of black belts to prevent in-house jokes of skepticism ... Six Sigma is a success this time around. The company has saved \$64 million with its first 40 projects."
- "John Akers promised to turn IBM around with Six Sigma, but the attempt was quickly abandoned when Akers was ousted as CEO in 1993."
- "Marketing will always use the number that makes the company look best ... Promises are made to potential customers around capability statistics that are not anchored in reality."
- "Because manager's bonuses are tied to Six Sigma savings, it causes them to fabricate results and savings turn out to be phantom."
- "Six Sigma will eventually go the way of other fads, but probably not until Welch and Bossidy retire."
- "History will prove those like Smith wrong, says Bossidy, who has been skeptical of other management fads. Six Sigma is not more fluff. At the end of the day, something has to happen."

I believe that Six Sigma can be the best thing that ever happened to a company. Or, a company can find Six Sigma to be a dismal failure. It all depends on implementation. Organizations need to follow a road map that leads an organization away from a Six Sigma strategy built around "playing games with the numbers" to a strategy that yields long lasting process improvements with significant bottom-line results.

Background of Six Sigma

Motorola coined the term "Six Sigma" and created the original formulas in the 1980's. "The result was a culture of quality that permeated throughout Motorola and led to a period of unprecedented growth and sales. The crowning achievement was being recognized with the Malcolm Baldrige National Quality Award." (Wiggenhorn 1999)

The term sigma is a Greek alphabet letter (σ) used to describe variability, where a classical measurement unit consideration of the program is defects per unit. A sigma quality level offers an indicator of how often defects are likely to occur, where a higher sigma quality level indicates a process that is less likely to create defects. A Six Sigma quality level is said to equate to 3.4 defects per million opportunities (DPMO). [Pat Spagon from Motorola University prefers to use the terminology "sigma quality level" to distinguish this quality measurement from the sigma nomenclature that quantifies the spread of a distribution. (Spagon 1998).]

Many companies have recently experienced success using Six Sigma as a business strategy. When a company implements a Six Sigma business strategy, statistical tools are used in a structured fashion within processes to create products or services that are improved, less expensive, and more timely. Repeated use of the tools by practitioners on a project by project basis can significantly improve the bottom line; however, if the techniques are not used *wisely* there is a very large danger that the effort will be counterproductive and frustrating.

Six Sigma Implementation Issues

Organizations can sometimes get too involved in "how to count defects" and report defect rates that they lose sight of the real value of Six Sigma -- orchestrating process improvement and re-engineering (and bottom-line benefits) through the *wise* implementation of statistical techniques. If an organization does not apply Six Sigma techniques *wisely*, it will fail. When this occurs there is the tendency to believe that the statistical techniques are not useful, when in fact the real problem is how the program was implemented and/or how the techniques were not effectively applied.

A good Six Sigma business strategy involves the measurement of how well business processes meet their objectives and offers strategies to make needed improvements. The application of the techniques to all functions results in a very high level of quality at reduced costs with a reduction in cycle time, resulting in improved profitability and a competitive advantage. It needs to be emphasized that organizations do not need to use all the measurement units that might be associated with Six Sigma. It is most important to choose the best set of measurements for their situation and focus their emphasis on the *wise* integration of statistical and other improvement tools.

A good Six Sigma implementation plan defines Six Sigma projects in critical areas of the business. A road map for selected projects involving the phases of measure, analyze, improve, and control is described in Breyfogle (1999) as a Smarter Six Sigma Solutions (S^4) approach. [Smarter Six Sigma Solutions and S^4 are service marks of Forrest W. Breyfogle III, as described in the referenced book.]

Once an implementation plan is in place, the issue of deployment comes to the fore. In Part II of this article some specific steps in a sound deployment strategy will be discussed.

References

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Author

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