SIX-SIGMA: WHY DO IT?

What is it?

6-Sigma is a tool that significantly improves customer satisfaction and shareholder value by reducing waste and variability in every aspect of our business. By following a structured approach, six-sigma helps in better understanding of customers' needs and wants from their point of view, and be able to build and/or modify processes and products to meet or exceed their expectations.

What does it mean?

While most companies operate at 3-sigma level or 66807 defects per million - achieving 6-Sigma means a failure rate of only 3.4 parts per million or 99.9997% perfect. The term 6-sigma, in practice, is used to denote more than simply counting defects. 6-Sigma can now imply a whole culture of strategies, tools, and statistical methodologies to improve the bottom line of companies.

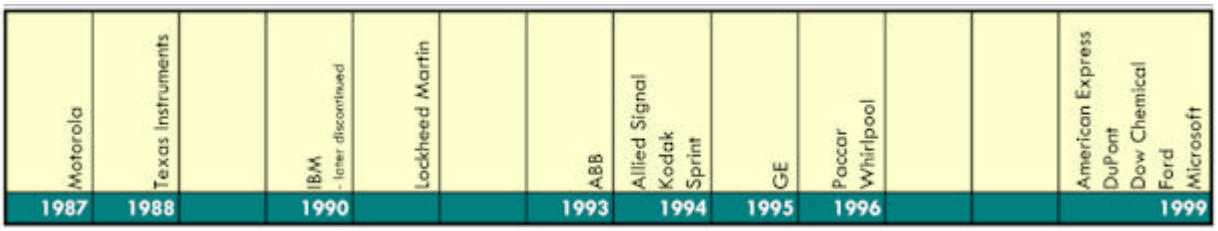
Sigma Level	Defects per million
6	3.4
5	233
4	6210
3	66807

A change in quality levels from 3-sigma to 6-sigma results in nearly a 20,000-fold reduction in defects. 6-sigma is a rigorous analytical process for anticipating and solving problems. Solving problems improve revenues and profits through defect reduction, improved consumer satisfaction and best-in-class product and process performance.

Anticipating problems comes from listening to the consumer insights and devising plans to meet or exceed their needs. As new products get introduced, wants become needs and the consumer "needs" set keeps on growing. If we are designing vehicles for two-or-three years down the road we need to maintain flexibility and meet the consumer demands head-on. This is the essence of consumer-driven 6-sigma process.

Is it popular?

The popularity of 6-sigma is growing in companies and businesses worldwide. The figure shows a few companies that have implemented and institutionalized 6-sigma over the past few years. Not always do six-sigma principles be successful – strong leadership at the helm and dedicated workforce can make this happen and help realize the true benefits of the program.

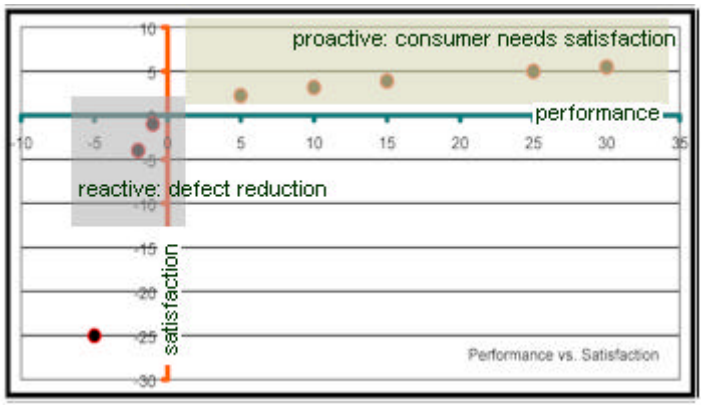


Why is it important to the companies?

6-sigma improvement projects typically return between $150-250k per project. However, the reason for instituting consumer oriented six-sigma goes beyond just the dollars. Some of the projects undertaken for six-sigma change the very dynamics of the ways things get done and provide a significant competitive boost to the company or product.

For example, it was reported that, Allied Signal found a way to clean dirt, oil and stains from old carpets so that 100 million pounds of old carpets will be recycled back into new rugs rather dumped into landfills. This kept the company from building a $85 million plant in addition to annual savings of $30-$50 million per year. Practice and perseverance are the key to successful implementation of these projects. United Technologies Automotive [UTA] molds plastic into casings used for car sideview mirrors. Environmental laws prevented UTA from making more casings because they were limited by pollution caused by the painting. Using six-sigma, GE found a way to add a carbon-based conductor to plastic causing far more paint to stick and cutting UTA's pollution by 35%. Now GE sells more plastic to UTA!

Through constant application of the six-sigma principles companies need to move beyond regular problem solving towards more proactive needs analysis and coming out with better products before any competitor does.



graph with performance on the x-axis and satisfaction on the y-axis

When to use it?

The bottom-line often drives management action. First, you need to determine and understand what your cost of (poor) quality is and what would enable a major change or help your line of work. Since 6-sigma basically focuses on process quality, it falls into the category of a process capability (Cp) technique. Traditionally, a process was considered capable if the natural spread, plus and minus three sigma (a yield of 99.73%), was less than the engineering tolerance. A later refinement considered the process location as well as its spread (Cpk) and tightened the minimum acceptable so that the process was at least 4-sigma from the nearest engineering requirement. Six-sigma requires that processes operate such that the nearest engineering requirement is at least plus or minus 6-sigma from the process mean. This requires considerable scientific and testing actions - often thousands of tests are run on multiple variables to get an understanding of what's going on.

Once you determine the process variables by using other process analysis techniques, you need to consider which are causing the major losses and strive to make them more capable.

- Understand who your consumers are and what your product / service is
- Review consumer surveys, concession reports, and other data
- Screen and prioritize issues by severity, frequency/likelihood of occurrence ..
- Determine the internal processes causing the most pain
- Find out why and where the defects are occurring
- Devise ways to address these defects effectively
- Setup a good metrics (six-sigma places a lot of emphasis on measurement)

Just do it!

Stay focused and committed.

Note:

This article has been written by Lisa Daita & our team to serve as an overview of the use of six-sigma and is for informational purposes only. This comes from review of several good papers in the field and from many learned sources. We do not have a bibliography available at this time. We have not cross-checked the validity of the claims made by different parties and any exclusions are unintentional.