Implementing Six Sigma - Part II

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In the part I of this article Six Sigma techniques were described and some of the background of Six Sigma was provided.

A good Six Sigma implementation plan defines Six Sigma projects in critical areas of the business. A road map, or visual description, is useful in developing a sound deployment. The phases of deployment are: measure, analyze, improve, and control. These four phases, referred to as S4 (Smarter Six Sigma Solutions) can be cast in the form of a project. [Smarter Six Sigma Solutions and S4 are service marks of Forrest W. Breyfogle III]

A visual description of this project-based implementation of S4 within an organization is shown in Figures 1-3 for a key process output variable (KPOV) that has direct monetary implications. The following elaborates more on these figures and this strategy.

Deployment of Six Sigma: Projects with Bottom-line Benefits

Often organizations do not look at "their" problems as the result of current process conditions. However, if they did, Figure 1 might describe their situation. They might also have a variety of key process output variables (KPOV’s). A KPOV could be a critical dimension, overall cycle time, a DPMO rate (i.e., a defects per million opportunities metric could expose a "hidden factory" that has much rework that is not currently being reported), customer satisfaction, and so on.
For this type of situation, organizations often react over time to the up and down movements of the KPOV level in a "fire fighting" mode, "fixing" the problems of the day. Practitioners and management might even think that this type of activity is making improvements to the system. However, in reality they are often spending a lot of resources without making any process improvements. Unless process changes are made the proportion of non-compliance, as shown in the figure, will remain approximately the same. Arbitrary tweaks made frequently in an attempt to control process variability and "noise" (e.g., material differences, operator-to-operator differences, machine-to-machine differences, and measurement imprecision) can impact a KPOV to a level that results in a large non-conforming proportion. Organizations who frequently encounter this type of situation have much to gain from the implementing an S4 program. They can better appreciate this potential gain when they consider all the direct and indirect costs associated with their current level of non-conformance.

The suggested S4 methodology is not only a statistical methodology but also a deployment system of statistical techniques, as described in Figure 2. For a S4 program to be successful it must have upper level management commitment and the infrastructure that supports this commitment. Deployment of the S4 techniques is most effective through practitioners, sometimes called black belts, change agents, top guns, or another term given by a company within its deployment approach. These practitioners are to work full time on the implementation of the techniques through S4 projects selected on business needs (i.e., have a very beneficial return on investment). Direct support needs to be given by an executive management committee who has high-level managers champion S4 projects.
When a practitioner utilizes the steps summarized in Figure 2 either during a workshop or as a project after a workshop, the type of process improvement described in Figure 3 can result, where the process has been simplified, designed to require less testing, and/or become more robust (i.e., indifferent) to the noise variables of the process. This effort can result in an improvement shift of the mean along with reduced variability that leads to quantifiable bottom-line monetary benefits.
Figure 3. Example process improvement and impact to a key process output variable. (Reproduced from Implementing Six Sigma: Smarter Solutions using Statistical Methods, Forrest W. Breyfogle III, Wiley, copyright 1999)

References


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