

Six Sigma Basics

Introduction

Six Sigma is a set of qualitative and quantitative quality tools that can help a business improve their processes. The efficiency built into the business processes brings about improved profits, confidence and quality.

The term Six Sigma comes from statistics to indicate that the process outputs fall within three standard deviations from the center (expected value) giving a range of six standard deviations (or six sigma- 6σ). As a result in terms of individual outputs it means you would have 3.4 defects per million items.

Six Sigma implementation has a number of levels of practitioners that work on Six Sigma projects. The industry (and certifying bodies) use the theme of Karate and use Yellow Belt, Green Belt, and Black Belt.

DMAIC and DMADV?

Six Sigma initiatives are used by organizations to provide a structured approach to improving and developing process excellence. A number of tools to accomplish this will be discussed in subsequent sessions. The Six Sigma tools are used within a specific organizational framework. The two most used frameworks are the DMAIC (Define, Measure, Analyze, Improve, Control) and DMADV (Define, Measure, Analyze, Design, Verify) approaches to problem solving. These data-driven process approaches to improving processes are also used in Lean and other quality initiatives.

The following table shows the characteristics of each approach.

DMAIC	DMADV
Used when an existing process or product does not meet customer expectations or is not performing adequately.	Used to develop a new process or product or, when after using DMAIC, the process still does not meet the customer's expectation or Six Sigma.
Define the problem in the current process, the improvement project goals, and internal and external customer expectations/ requirements.	Define the new process project goals and internal and external customer deliverables.
Measure the current performance of the process.	Determine and Measure customer requirements and specifications.
Analyze the process data to determine root causes of the poor performance of the process.	Analyze the process requirements and alternatives to meet the customer requirements and specifications.
Improve the performance of the process by eliminating the root causes of the problems.	Design the new process to meet the customer requirements and specifications.
Control the improved process.	Verify the design performance and ability to meet customer requirements and specifications.