Six Sigma: How Much Do You Know?

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Chances are if you have been working in a manufacturing environment you have heard of the problem-solving methodology of Six Sigma. But what is it? The following is a basic description of the Six Sigma DMAIC methodology (Define, Measure, Analyze, Improve, and Control).

Reaching Six Sigma

Generally Motorola is credited with originating the methodology in the 1980s to improve performance, but many of its ideas have been around for decades. Six Sigma searches to reduce variation in key business process outputs by reducing the variation in key process inputs. In doing so, Six Sigma focuses on reducing variation, a key concept for the methodology. It does this by methodically improving these processes. Processes that function at “Six Sigma” quality produce defects below 3.4 defects per one million opportunities, or 3.4 DPMO.

Just The Basics

There are two basic methodologies (although there are several derivations of each) described in Six Sigma: DMAIC and DMADV. DMAIC is used to improve existing business processes and DMADV is used when you are creating a new product, service, or design. Since we all have existing processes that can be improved let’s take a closer look at the DMAIC Methodology.

- The **Define** phase objective is to identify and/or validate the improvement opportunity, document the business processes, define critical customer requirements, and to prepare the team to be effective throughout the

process. Key deliverables of the Define stage are a project charter, (business case), of why your team should do the project, an action plan/timeline for completion, high level process maps, gathering the voice of the customer and their requirements, and identification of the high-performing team to solve the problem.

- The **Measure** phase identifies the critical measures that are necessary to evaluate the success of meeting the customer's requirements identified in the Define stage, and to begin developing the methodology to effectively collect data to measure process performance. The team will also calculate a baseline Six Sigma performance for the process the team is analyzing. By the end of the Measure stage, the team should have identified key input, process, and output indicators, the operational definition giving clarity to each indicator, and the collected data itself with the gap between process performance and customer requirements.
- In the **Analyze** phase of the methodology, the team will stratify and analyze the data to identify a problem and define an easily understood problem statement. Another goal is to identify and validate the root causes to the problem the team is focused on, to eliminate or reduce the "real" root cause of the issue.
- The objective in the **Improve** phase is to identify, evaluate, and select the right improvement solutions to optimize the process, as well as define a change management approach that will assist the organization in adapting to the changes introduced through solution implementation. The improved process map, improvement impact, and benefits to the organization and individual, should be evident when this is completed.
- The **Control** phase objectives are to plan and implement the improvement solutions to determine which approach is the best to achieve the desired results. The team should do a pilot to understand where the variance in the implementation plan occurs and correct it before the entire implementation is completed. Key deliverables here are the implementation plan, any training documentation, replication opportunities for the rest of the organization, analysis of improved sigma quality level, and the plan to continually measure the process and establish the control methods to "Sustain the Gains".

Follow Through

In general, the team is trying to find answers to the following questions as the DMAIC process unfolds: What's important? (Define), How are we doing? (Measure), What is wrong? (Analyze), What needs to be done? (Improve), and How do we guarantee performance? (Control).

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