How to Achieve Six Sigma Performance in Business Processes

Healthy and competitive businesses operating in today's technology-centric market are always on the lookout for ways to enhance their performance, profits, and competitive advantage. For those focused on continuous improvement through digital transformation, emerging technologies such as artificial intelligence, process automation, and advanced data analytics are core components of their business process management (BPM) strategy. But regardless of how "smart" technology becomes, it still takes human planning and processes to maximize its effectiveness and utility.

Six Sigma methodology (sometimes referred to as *Lean Six Sigma)* is a formalized quality management scheme that leverages continuous improvement to reduce or eliminate waste and lower costs while simultaneously boosting efficiency and streamlining business processes to achieve optimal return on investment (ROI). Understanding how Six Sigma works, and putting it to use in your own business, can help you achieve a stronger bottom line, greater customer satisfaction, and optimal efficiency.

Where Six Sigma Performance Comes from—and Why It Matters

Developed by Motorola in the 1980s, Six Sigma's name refers to the Greek letter **σ**, which is used in statistical analysis to refer to a single standard deviation. When processes have six sigmas of deviation (three above the mean, three below it), they generate only 3.4 defects per million opportunities. This very tight margin for quality, efficiency, and accuracy translates to both a standard for success and a baseline for additional improvement within the Six Sigma performance framework.

Three principles provide general guidance for Six Sigma projects:

- **Smaller is Better.** In order to properly evaluate performance and improve it, the process being optimized should have an *upper specification limit*, e.g. zero rejected parts, *x* number of defects per million produced, 2 one-star reviews per 100 calls, etc. The goal is to keep process performance at or below this limit.
- **Larger is Better.** Having a *lower specification limit* helps Six Sigma project managers set a baseline for performance, in contradistinction to an upper specification limit. Examples include minimum customer satisfaction ratings of four stars, 99.8% on-time delivery, and 99.9% invoices properly matched with their associated purchase orders.
- **Nominal is Best.** When applying this principle, Six Sigma project managers attempt to balance multiple factors to achieve a satisfactory

> outcome that ticks multiple boxes. So, for example, customer service reps might have an upper specification limit of seven minutes per support calls, but have a concurrent lower specification limit of four star service ratings by the customers they help. When optimizing this process, the "sweet spot" lies in ensuring enough time is devoted to resolving customer issues and meeting customer expectations while remaining optimally productive over the course of the workday.

Six Sigma can be used to optimize nearly any process, from production to procurement to customer service. The goal of every Six Sigma project is to identify, analyze, and remove defects that create variations from the desired outcome.

Companies as varied as General Electric, Starbucks, and Microsoft have all used Six Sigma to optimize processes and reach goals such as bigger profits, improved customer experience, and more precise, less wasteful production via process improvement.

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Essential Terms for Effective Lean Six Sigma

With Six Sigma, as with so many modern business practices, it's important to master the lingo if you want to get the most out of the process. Understanding key terms is critical to Six Sigma success!

Belts: As with martial arts, mastery in Six Sigma is commemorated with belts.

Different colors indicate different levels of mastery:

- **White Belts** are professionals who have no or minimal Six Sigma tools and training.
- **Yellow Belts** have attended some additional Six Sigma program training and can contribute more substantially to Lean Six Sigma projects.
- **Green Belts** are certified Six Sigma professionals who have attended a full course. Green Belts apply their Lean Six Sigma training to head up projects and use Six Sigma DMAIC principles and project management skills in other capacities to achieve quality improvements outside of formal Six Sigma environs.
- **Black Belts** build on their Green Belt certification with greatly expanded training and a leadership role in developing, planning, and executing Lean Six Sigma projects.
- **Master Black Belts** are experienced Black Belts who have expanded their Six Sigma skill set and may provide training themselves.
- **Champions** have achieved the highest level of Six Sigma mastery and operate as mentors and trainers.

Customer: The party whose expectations must be met in order for any specific outcome of a process to be considered a success. Customers can be internal or external, depending on the process being optimized.

Defect: The end result (usually a product) that fails to meet the standards for the project—and customer expectations. Physical goods might be out of spec with regard to size, shape, or quality; for services, defects usually refer to unsatisfactory performance as measured against key performance indicators (KPIs) such as processing time, shipping delays, or poor customer satisfaction ratings.

Opportunity: Any chance to create or add value for a customer is an opportunity. For example, a manufacturing opportunity in production is meeting or exceeding customer specs for quality, size, and delivery deadlines. For an internal customer, an opportunity might be finding a way to automate low-value, time-consuming, and repetitive tasks to lower cycle times and free up staff for more valuable work that supports organizational goals.

Unit: An end result of a process, delivered to the customer; one single product or service. It could be a finished product, a customer service call, a verified invoice approved for payment, etc. Note that every unit has the potential to contain multiple opportunities for additional value.

Yield: The percentage of opportunities successfully completed. Yield can be expressed as a percentage of defect-free outcomes using the following formula:

(Opportunities – Defects) ÷ Opportunities = Yield

Exploring the ways in which these terms interact leads us to another set of related acronyms:

Defects per Opportunity (DPO): The ratio of defects as compared to opportunities. For example, when a customer purchases a widget on the phone from your company, they will have a large number of expectations for performance, quality, accuracy, and completeness. Every criteria presents an opportunity to add value *or* fail to meet expectations.

Expressed as **Defects ÷ Opportunities = DPO**

Defects per Unit (DPU): Similar to DPO, but measures the number of defects per deliverable (unit) rather than opportunities associated with that unit.

Expressed as **Defects ÷ Units = DPU**

Defects per Million Opportunities (DPMO): This acronym gets to the heart of Lean Six Sigma, as it's used to directly measure process performance at the enterprise level.

Expressed as:

DPO x 1000000 = DPMO

or

(Defects ÷ (Sample Size x Opportunities Per Unit) x 1000000 = DPMO

Once you know the DPMO of a given process, you can determine the Six Sigma level of that process using special Normal Distribution Tables. Results that fall outside expected values may require consultation of a control chart to determine just how far out of spec they are.

Rolled Throughput Yield: A measure of the health of a given process. Provided you've properly mapped the process and tested for defects at each stage, you can calculate the odds that a complex process will produce a defect-free unit.

Expressed as:

DFU_1 x DFU_2 x DFU_3 x DFU_4 x …DFU_n = RTY

Where:

- **DFU** is the percentage of units free from defects in each step
- $_n$ is the number of steps

While you may not perform these calculations yourself, it's helpful to understand their role in the Six Sigma process in order to collaborate and communicate effectively with other stakeholders during the project at hand.

Six Sigma in Action: DMAIC

The Six Sigma process relies on an improvement methodology known as DMAIC (i.e., "Dah-may-ick") to identify both those aspects critical to quality standards (CTQS) for the process and the root causes of existing process inefficiencies, and then rework the process for optimal performance using continuous improvement.

DMAIC takes its name from the five steps that make up the process:

1. **Define.** All the parameters of the project, including the problem, the target customer (internal or external), requirements and standards, and customer expectations are all mapped out during this stage.
2. **Measure.** Current processes are evaluated and enumerated using process mapping. Data is collected and evaluated using performance metrics.
3. **Analyze.** Data analysis is used to determine both process capabilities and the root cause(s) of defects or inefficiencies. It is also used to generate suggested improvements in process control and performance.
4. **Improve.** Improvements are applied to target and eliminate the root causes of the defects/failures/inefficiencies in the process.
5. **Control.** The process is monitored for performance data and to ensure compliance with the changes. Successful improvements are noted, as are additional areas of potential improvement, new goals are set, and the DMAIC process begins again in order to ensure continuous improvement.

The true power of DMAIC lies in its universal applicability. It can be used to rework and optimize *any* business process, making it an invaluable tool for organizations and businesses of all sizes.

Six Sigma in Procurement

While it has universal appeal, Six Sigma performance has special value in procurement, which touches all the business units of an organization and provides rich opportunities for added value through optimization of workflows, standardization of processes, and cost reduction through the elimination of rogue spend and fraud. Fine-tuning your procurement function for optimal performance creates a ripple effect that spreads throughout your entire organization.

Six Sigma implementation is greatly simplified in this area with help from a robust procurement solution such as PLANERGY. Artificial intelligence and advanced analytics, paired with automation and centralized, cloud-based data management, give you a powerful toolset for applying DMAIC to your entire Procure-to-Pay (P2P) process, as well as all your other business processes.

Lean into Six Sigma for Optimal Performance

Remember—no matter how great things are, chances are they *could* be even better. Achieving Six Sigma performance in your business processes is easier than you might think, especially if you've embraced digital transformation, automation, and advanced analytics as BPM essentials. Invest in Six Sigma's continuous improvement and achieve gains in productivity and efficiency today that will lead to even greater success tomorrow, next year, and beyond.

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