In case you haven't noticed, the Six Sigma quality revolution is gaining greater acceptance as the long-term strategy to sustainable productivity. Simply stated, Six Sigma focuses on reducing variation in our business' internal processes using a rigorously structured, statistical approach that is tied to business results.

When senior leadership truly understands this premise, it should be demanding to measure the Six Sigma linkage to bottom-line business results. Without this kind of educated leadership and demand for business linkage, Six Sigma will go the way of Quality Circles.

First, senior leadership must understand the business value of process variation, or the cost of poor (internal) quality (COPQ).

COPQ is determined by assigning a dollar value to waste created in the process (whether a process is manufacturing or a work process, such as accounts receivable).

The Six Sigma culture promotes that any activity or process that does not perform perfectly the first time contains COPQ—for example, warranty returns, cost of inspection, unplanned equipment failures, equipment performance rate losses, product changeovers, waiting on raw materials.

Is there COPQ in the numerous processes that make up maintenance? How about daily work schedule compliance, equipment with low MTBF, spare parts quality or availability, unnecessary maintenance or PMs?

Second, senior leadership must be committed to characterizing the process variation issues that make up the gap between current performance (baseline) and ideal performance or entitlement, which can be described as zero losses in any of the three elements of productivity:

- Availability (zero downtime, even for PM).

- Performance Rate (zero losses in the instantaneous best capacity rate possible for the design).
- First Pass Yield (zero defects in every process step).

The objective of Six Sigma is to economically reduce these identified issues that comprise process variation, which are assigned a calculated business value, the cost of poor quality.

The power to improve productivity is hidden in the COPQ value of this gap between baseline and entitlement. Traditionally, we think of defects in percent yield, downtime hours, and other process measures. When these process measures are converted to COPQ dollars, and priorities are examined using the Pareto Principle, it becomes perfectly clear where the trained experts in Six Sigma methods and statistical tools must focus their talents.

So where does asset dependability fit in? Nearly everywhere. However, most Six Sigma education today lacks the treatment of the influence of assets on the gap between current performance and entitlement. Six Sigma teachings almost exclusively focus upon reducing process variation, where asset dependability variation can be contributing as much as 20 to 30 percent of the overall gap in COPQ.

Being a certified Six Sigma Expert myself and having led Six Sigma training in a reliability and maintenance environment, I am discovering 10 to 30 percent of newly identified experts-in-training are faced with asset dependability variation as the keynote issue. Trouble is, traditional Six Sigma training lacks the needed tools in reliability, maintainability, and operability, which can be used to drive out variation in asset dependability.

The Six Sigma community needs to discover asset dependability variation as the new productivity frontier. We in the reliability and maintenance business have long held the tribal knowledge that asset variation is a productivity killer. These two productivity communities need to join forces to enable our industries to gain further productivity advantage. To that end, the maintenance community needs training in Six Sigma principles and statistical tools to become an effective partner in the fight to reduce process variation, while the Six Sigma community needs to recognize the added value of assigning COPQ for gaps in asset performance.

Applying the structured, business-driven statistical approach of Six Sigma to asset dependability variation can add a new element of credibility for the reliability and maintenance community. A Six Sigma approach can be leveraged to validate what we have known in our maintenance tribal knowledge for years, but have had mixed success in quantifying the business value of reducing COPQ.

Another key element in all this is that as asset dependability shows up in the gap characterization for COPQ, the clearer the message will be to leadership of the need for specific reliability and maintenance tools, which traditionally have been difficult to sell and sustain. **MT**

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