

## When It Comes to Cost Reduction, Variation and Waste are the Enemy

An Article from Mike Weekes and [Whataboutquality.com](http://Whataboutquality.com)

In a recent survey of 89 organizations conducted by [Whataboutquality.com](http://Whataboutquality.com), respondents were asked what few key characteristics defined quality, in the eyes of their customer, the most popular response was: ***the product or service met my requirements***. The next two most popular responses were: ***it worked like I expected and it was a good value, worth what I paid for it***.

More than 75% of those responding said there was room for improvement in the cost of producing their products and services. All respondents identified the current economic downturn as having a significant negative impact in their bottom line.

When fighting to stay alive in these troubling times, more than ever you need to have a firm idea of the voice of your customer. You need to vigilantly seek out and destroy those issues stealing your profit.

So how do you continue to exceed customer expectations and simultaneously reduce costs? There are two paths to take. You can find and reduce the variation in your process and you can eliminate as much of the non-value-added waste in your operation.

### Reducing Variation

Variation is natural. There s no problem with variation until it runs into those nasty control limits we need in every step of the process to keep it delivering predictable, reliable output. In the six sigma arena, variation is the enemy.

So, ask yourself, Where is my variation? Is it in the PTH area or the SMT part of the process? Is there a relationship between your defects and one particular machine, one shift, one team? Is there a relationship between your methods or your metrics and your defects?

Go out to the process and gather data. Yes, I know you have data, so much so that you don t know what to do with it. Start my looking at where and when the defects occur. Establish your current picture; your current state. Now we have a place to begin. This is the YOU ARE HERE of the improvement journey.

Once you sort out where and when the defects are happening, and you sort this information in decreasing order, from worst to best, you have an area you can focus on.

Let s suppose you collect one week of data and it reveals that one particular assembly represents the second-worst instance of insufficient solder joints as well as the third worst instance of solder opens. The operator, also known as the process knowledge expert, knew this was your biggest issue, but no one ever asked him about it.

Now you have a quantitative measure of how bad this problem is, with respect to the total picture. You have a metric you did not have before, which enables you to prioritize your limited improvement resources to attack the problem.

Once you define the problem, as specifically as you can, you now can imagine a goal for improvement. Perhaps you estimate that by introducing a new work instruction at the wave solder machine and re-training the operators in three key factors that reduce variation in the process will eliminate half of the issue.

With a little activity-based costing, you may have estimated that each of these defects was costing your firm \$0.50 each. Based on the 3,500 assemblies per month, and the average of 27 defects per board, the business case for this improvement is now worth investing in.

If you go to your management with an improvement initiative worth an annual savings of more than \$28,000 with a week or so of effort, they are more likely to listen and authorize your effort.

In the six sigma methodology, after we define the problem, measure the performance of the process, we can now go to our reliable cause-effect fishbone diagram and brainstorm with the team to hypothesize (guess) what the causes are. Our analysis may reveal that the machine had been looked at as a black box .

Keep asking, Why do we do it that way? Don't settle for not knowing what's at the root of your issues. Remember. You're probably not the first to face this problem, or find its resolution, so establish relationships with organizations like the SMTA that share their knowledge capital. Use equipment manufacturer process personnel to your advantage. It's in their best interest to help you optimize your process.

Now, with more focus on a few key equipment parameters, we eliminate part of the variation. With new job aids and a training class, emphasizing the critical aspects of the process driving quality, we help the operators focus on the one correct way to run the process.

Improvement is about trying out some action to eliminate the cause of the problem, measuring the process output and declaring our guess a solution, if the defects decrease. If the problem persists, we go to the next idea of what we think the cause is, and try something else. We do this until we achieve the improvement we had hoped for.

Finally, we sustain the improved state of the process by standardizing. Create one way to measure performance, instruct process personnel what to do and how. Look for ways to eliminate choices, causes of errors or mistakes. Like a tool crib that only allows for the storage of the right tool in the right place, eliminate all the democracy in your process, except for ideas on how to further standardize it.

## **Eliminating Waste**

If variation is the enemy in the six sigma methodology of process improvement, waste is the enemy in lean theory. Waste keeps products from flowing through the process.

Waste, also known as non-value-added expense, takes many forms. Waste includes defects, overproduction, transportation, waiting, excessive inventories, excessive production and motion.

If we were to pick one of these, besides defects, which are the greatest symptom of waste, it would be inventories. Inventories are created any time a step in a process produces output that the next step is not yet ready to process.

Like you would in a six sigma effort, in the hunt for variation, in a lean initiative you likewise go out and walk the process, as if you were the product or service being created along the way, from receiving to shipping.

When you find the inventories, the bottlenecks and the delays, the interruptions in the flow, you're half-way to reducing waste.

Another way to look at this process of discovering your process is to find the constraint, the pace-setting process or activity in your process flow. Your product or service can only go as fast as the slowest step in your process. Determine what that is and decide if you can meet your delivery schedule based on it or whether you need to improve the flow there.

The secrets to reducing your costs lie in reducing variation and waste. Walk through your process and discover where the problems are. Gather and sort the data into some expression that compares defects to location, team, product and other variables. Look for the inventories, bottlenecks and constraining process areas.

Prioritize on those problems with the simplest solutions and/or the highest impact. Simplicity depends on resources required to analyze and solve. Impact means how much cost can be avoided with the elimination of the problem.

You can't solve every problem, especially with limited resources, so focus on the low-hanging fruit. Use data to show you where to focus. Don't let experts and their opinions about what's wrong guide your efforts. That's probably why you have the issues you have now.

Contact **Mike Weekes** at [info@whataboutquality.com](mailto:info@whataboutquality.com) if you have questions about your business process issues and how to regain profit through quality. Mike is the author of **Everything is a Process** and President of **Whataboutquality LLC**. His blog is <http://www.whataboutquality.wordpress.com/>.