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Increase Profits by Minimizing Inspection

by **Steve Williams**

THE RIGHT APPROACH CONSULTING LLC

“We strive to decide our own fate. We act with self-reliance, trusting in our own abilities. We accept responsibility for our conduct and for maintaining and improving the skills that enable us to produce added value.”

—Excerpt from Toyota Motor Corporation’s internal document, “The Toyota Way”

Wrong-Headed Thinking

The opening quote captures the values and ideals of Taiichi Ohno, one of the inventors of the Toyota Way tasked with transforming Toyota into the world-class manufacturing enterprise that it is today. Some of my columns may sound like a broken record to my readers regarding best practices/Lean as a “be-all, end-all” to every problem a company can have. It may surprise you that I strongly disagree with that; Lean certainly has limitations and does not

play particularly well in high-mix, low-volume (HMLV) operations like PCB manufacturing. That being said, what I do believe is that there are very few problems that cannot be helped with a thoughtful, selective application of best practice tools appropriate to the situation.

Unfortunately, one of the first reactions to a process problem with many companies, especially in a very complicated operation like PCB manufacturing, is to throw more inspectors at it. This knee-jerk reaction has a triple impact on profits:

1. Inspection by definition is a non-value-add reactive process.
2. Inspection doesn’t address the root cause of the issue and assures it will resurface at some point.
3. Inspection is not effective.



Inspection Is Evil

A wise man once said, "Inspection is evil." Actually it was me, and I didn't say it just once, I say it every chance I get. Inspection is a non value-add activity and companies tend to use it to hide many sins. Traditionally, leaders of American industry have had a one-size-fits-all solution to just about any manufacturing problem they encounter: they throw more inspectors at it. Customer returns increase and/or internal yields decrease: "Let's hire more inspectors to make sure our customers do not receive the results of our inefficient process." Whether you find bad parts internally or ship them, the customer is paying for your process inefficiencies either by defects, or the cost of your inspection, rework and repair. I am here to tell you that this approach simply does not work, and I will prove it to you shortly.

From a functional standpoint, there are three types of inspection:

1. Judgment/standard inspection
2. Informative inspection
3. Point of origin inspection

The first two are widely used and considered traditional methods of quality control. Point-of-origin inspection is the only method that actually eliminates defects by putting the responsibility for quality back at the manufacturing source, which is quality assurance.

Not only is inspection non value-add, it is ineffective as well! How effective would you think visual inspection is? Would you be surprised if I said that *100% visual inspection is only 80–85% effective!* Don't believe me? Then I would challenge you to gather up at least 30 people from your organization and perform what I like to call "Steve's F Test." Your 30 people are your "F" Inspectors, inspecting the product for the presence of the letter "F." Put the following paragraph up

on a screen and administer the test with the following instructions:

"Read through the text in Figure 1 below ONCE in the time allowed and count the number of times the letter "f" appears. Do not read through the paragraph twice, as this would be 200% inspection. You have 60 seconds!"

Once the time is up, go around the room and write down each person's count, construct a quick histogram and show the results. Reveal the correct answer (39) to the group. I can guarantee that in almost every single case, you will end up with a normal bell-shaped distribution, proving that your "F" inspectors may be hard pressed to even hit the 80% accuracy level. I have administered this test literally hundreds of times and not once has this not been the case. And remember, this was only a 60-second test; think about the drop of efficiency due to fatigue, distractions and boredom of inspectors over an eight-hour shift!

Believe me now? So is inspection a good way of ensuring quality and profit? I think not. Considering the multiple negative impact of excessive inspection, I would argue that inspection is one of the more hidden destroyers of profits in any organization. Inspection is evil.

What is the Solution?

That is simple: applying the appropriate best practice tools discussed in detail in my past columns to drive to true root cause to permanently eliminate profit-sucking process problems from your operation.

The necessity of training farm hands for the first class farms in the fatherly handling of farm livestock is foremost in the minds of farm owners. Since the forefathers of the farm owners trained the farm hands for the first-class farms in the fatherly handling of farm livestock in the first place, the farm owners feel they should carry on with the family tradition of training farm hands of first-class farms in the fatherly handling of farm live stock because they believe it is the firm basis of first class fundamental farm management.

Figure 1: Steve's F Test.

Typical Business Expenditures

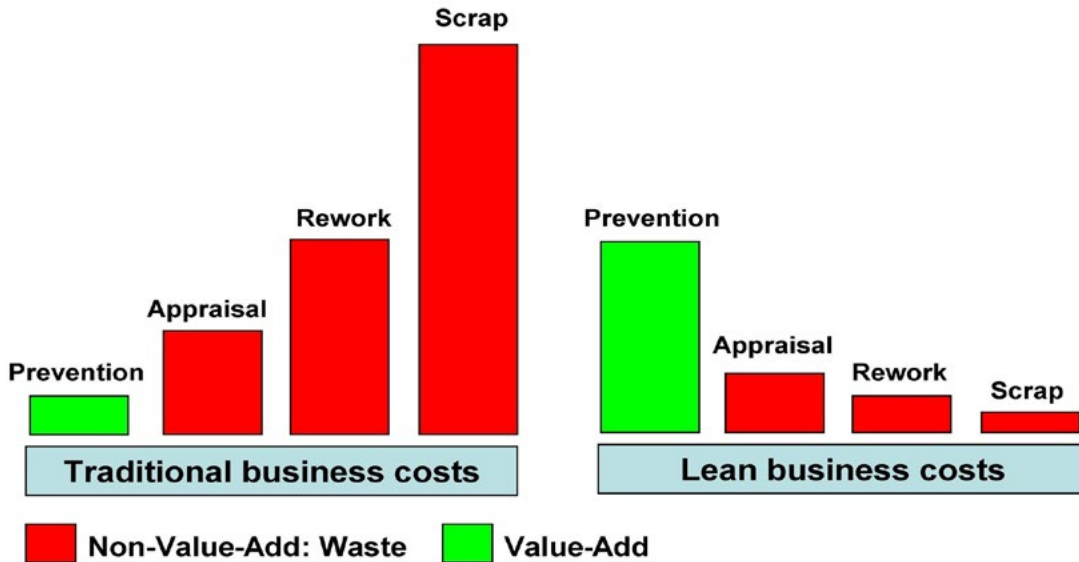


Figure 2: Typical business expenditures.

Let's take a macro look at where companies spend their money in terms of the cost of quality. The cost of quality refers to costs related to prevention, appraisal (inspection), rework, and scrap (customer returns are factored into either rework or scrap). Figure 2 shows the relative distribution of expenditures in a typical company, with largest portion of expense resulting from bad quality (scrap). The traditional business will spend about *three times the amount of money on appraisal (inspection) than they do on prevention*. When you combine appraisal costs with the exponential amount of dollars that are being wasted on rework and scrap, it is clear that this is not an effective model.

Now, contrast that with the Lean business model. By spending a majority of their expenditures on prevention, appraisal costs can be greatly reduced and rework and scrap are maintained at minimal levels. Not only are the dollars being spent in the right places, consider the order of magnitude of total cost. ALL the costs in the lean business model, combined, *amount to less than the money a traditional company is wasting in scrap alone*. Talk about financial metrics; these savings transfer directly to bottom line profit!

Permanent Problem Elimination is Key to Profit

Identifying and fixing problems instead of foolishly trying to “inspect in quality” by sorting will have a greater impact on profit than raising prices your product, hammering your suppliers for lower costs or most any other traditional profit enhancement initiatives an organization can implement.

I will close, as I began, with a quote that sums up this worthwhile discussion in one sentence, by one of the true greats:

“The most dangerous kind of waste is the waste we do not recognize.”

—Dr. Shigeo Shingo, consultant to Toyota Motor Corporation **PCB**



Steve Williams is the president of The Right Approach Consulting LLC. To read past columns, or to contact Williams, [click here](#).