

## Understanding Variation - the Basics of Six Sigma

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Here's a basic concept that many American managers have been slow to grasp: Reacting to normal variations in the business process as if all variations were exceptions. This adds cost to their operations.

Of course, as managers, it's our job to spot and respond to anything that varies from specified procedures or outputs, and then try and adjust it, correct it, control it. The problem is that we often over-react and end up over-controlling the process in a way that actually increases, rather than reduces, the variability.

For example, let's imagine that your management team is gathered together in a conference room. Someone is too cold. The thermostat is turned up, even higher than before to warm them up quickly. What happens? You guessed it - more people become uncomfortable, prompting another even greater adjustment of the thermostat.

What went wrong? Simply, an unwillingness to accept and understand normal variation that eventually led to increased variability.

By focusing on the exception (trying to warm up the one cold person), a manager turned up the thermostat. Overcompensating for the natural variation in temperature, and, in the end, increased variability (causing more than one person to be uncomfortable) and through repetition of the process, the effort to respond, then control, got out of control.

What would have happened if this manager just left the room temperature alone (and accepted variability)? At worst, he would have had one cold colleague. On the other hand, over time, this colleague's body temperature may have adjusted to the room temperature by itself.

We need to realize that variation is a natural occurrence and by "over-controlling" we become our own source of increased variability and increased cost in the end.

Let's take a closer look at variability. Variability is an unavoidable difference among individual inputs and outputs of the process. Variation is a natural element of any process, and it is everywhere. There are two types of variability, and it may help to understand the difference. First, we have "common" causes of variability. These are random and have random impact. Over time, their frequency distribution will form a stable or constant pattern. Their outcome is predictable and is permanent unless action is taken to change the process. Typically, this "normal" type of variation is associated with 85 percent of process concerns.

The second category is "special" causes of variation. These are typically associated with one or few major-and readily identifiable-sources. Their frequency distribution may remain normal but might change in size, spread or location-and they have unpredictable outcomes. They are correctable when action is taken on a specific area, or specific areas, of a process. These "abnormal" variations are generally associated with 15 percent of process concerns. Truly understanding variability requires a shift to process thinking - - something we Americans have never found easy to do.

In this next example, we'll see how time and money come into play. Let's say you have 20 major customers. Sure, you have a standard order entry procedure, but each customer is different - is special - so their orders are treated in different manners. Before long, you have 20 different order-entry procedures. If the orders get filled and get filled on time, so what? Where's the problem? You now have more than one process. Each order is different. In a sense, you are reinventing the wheel every time.

How does a new employee learn to take an order? Doesn't this increase training time and lead to greater uncertainty? Which order-entry process do you use for new customers? Are you using the correct one? All this leads to an increased opportunity for errors.

The successful manager will recognize that, naturally, all his customers are different. But that doesn't mean their orders can't be taken in single format. And, yes, there will be exceptions on almost every order. But let's take as much of the order in a standardized form then see how much of it is truly an exception.

We, as managers, would do well to learn to accept the natural variation in our processes and not react unnecessarily. We must begin to recognize that problems in variability arise when we seek to change the process when it is already in control-albeit with normal variations-as illustrated in the temperature and order form examples.

Successful managers develop business systems that minimize variation. And, successful managers will accept normal variation as a normal part of business.

Let's stop chasing normal variations as if they were exceptions. By accepting normal variations in business we'll be able to work smarter and reap the rewards.