Solving problems using deterministic reasoning

When you hear that the service you are providing needs to be improved, there is a sudden sense of urgency to take action and make improvements. This is especially true if the feedback was unexpected. I want to caution you against just jumping at the problem and taking action without first understanding your customers’ needs and looking for the root cause of the problem. If you rush into things and address the wrong issues your well intentioned efforts will go to waste.

In this article post I want to introduce you to an important concept: deterministic reasoning. It can be summarized by saying that “Y is a function of X.” Figure 1 shows that this is written like an equation, but there is no math involved. What it illustrates is that the output (Y) you get from a process is determined by the inputs into the process (X’s) and the service or product design and process steps (f). To reframe this, the service experience you provide is determined by how the service was designed, the steps you have to go through to serve the customer and the inputs you use to provide the service (e.g. knowledge, equipment, materials, time, training, etc.).

This is a cause and effect relationship, and output is fully dependent on the process used and the inputs that go into it. What is important to note is that you cannot control the output (Y). Once the customer has experienced your service you can’t turn back time and change it. You can only address any negative effects that might have come from the service you delivered and move on. Think of it this way, if you get a bacterial infection you can use over-the-counter medications to mask the symptoms (the Y output) and make yourself feel better, but they will not make you well. A doctor can prescribe antibiotics which will destroy the bacteria (the X input) and treat the root cause of your illness.

Like to masking the symptoms of an illness, spending time trying to fix what is wrong with the service after the fact is a poor strategy. The correct approach is to control the process and inputs that go into your service and determine the quality of your output before it reaches the customer. Real improvements come from focusing efforts on making the process and the inputs better. If the process and inputs are excellent to start with, then the output will be excellent and the customer will have a positive service experience.
experience. Using the illness example again, this would be analogous to avoiding getting sick in the first place.

Let me give you an example from my own experience. The very first Six Sigma project I was a part of was for a major corporation that provides service on the products they sell. Leadership noticed that service calls and the associated sales were declining, and fewer customers were setting up service appointments when they called (the Y in the equation). The prevailing belief was that this was due to poor customer service. By examining the process and inputs for the root cause of the declining sales, we found that it was not a customer service issue. The service being provided was actually quite good and the customer service representatives had all of the tools and training they needed to be successful. We discovered that they were not asking customers for the sale. By changing the process steps and requiring that the customer service representatives direct customers toward setting up a service appointment (the f in the equation) the problem was solved and revenues increased. Had we gone with the initial hypothesis that poor service was to blame the company would have spent a great deal of time, effort and money on providing customer service training which would not have addressed the REAL problem.

I don't want to deter you from looking at your service output, because observing and understanding what is coming out of your process is a critical part of improving service. I do want to emphasize the idea that once you clearly understand the problem, your efforts will shift to looking for root causes and improving things at the source.

In other articles I address the ‘Y-side’ and discuss how to get a better understanding of your service output by gathering and analyzing customer feedback. As always, I welcome your questions or comments. You can email me at clayton.taylor@asu.edu.

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