

“The Value of Variability”

By Christopher Hart, Ph.D.

I once attended a course on quality in which everything ran like clockwork. The agenda was followed to the nanosecond. The curriculum and materials were standardized, and instructors’ presentations were scripted and flawlessly delivered. The duration of classes was timed and monitored, and class release times were carefully scheduled to accommodate hallway traffic patterns and even bathroom capacity!

The program would have been absolutely defect-free, if it weren’t for the problems created by people from the companies attending the program who insisted on interrupting with questions! The instructors’ typical response: “Can you wait for the Q&A period? We need to cover all the material for this module in the time allotted. If we don’t, that’s a defect in our process. And you know what we think of defects!”

What is wrong with this picture? A total lack of flexibility with regard to students’ need for interactive discussion. The instructor was trying to deliver a “perfect” presentation, but in fact he was treating the students as if they were standardized parts in a manufacturing operation—which they certainly were not. Customers never are.

The Mismatch

The highly structured, systematic methodologies for reducing process variation that have been so effective in improving quality in the manufacturing world can create serious problems when applied to many service processes in which variability is a given and the challenge is to capitalize on it. This mismatch is the focus of this column.

This is not to say that all service processes require flexibility. There are functions that are controlled and enhanced by using standard manufacturing approaches. McDonald’s Corp., for example, has strict policies specifying standards and methods for food preparation that must be followed to the letter. The company has another side to its operations, however, that capitalizes on variability: the “high-touch” services required to ensure that customers’ individuality is accommodated. The four values continually stressed by founder Ray Kroc—“QSCV” (quality, service, cleanliness, value)—pull together these two distinct sides of the business to provide a consistently satisfying experience, and not just a good, inexpensive hamburger.

Constraint vs. Variability

Standard manufacturing processes operate within the confines of a box that shrinks as experience, technology, and competition combine to require ever-increasing precision and greater efficiencies. Process variability is driven out, because straying outside the box (statistical control limits, actually) would result in quality defects and unnecessary costs. Thinking outside the statistical-control box is essential to achieving high performance in high-variability service processes. However, as I explained in previous columns addressing customer centricity and sensitivity to customer sacrifices, I’m not just talking about service businesses. Manufacturing businesses have many such processes, sales and new-product development, for example.

Unfortunately, quality-improvement traditionalists, who have had such success in the factory, often try to foist their variability-elimination boxes onto the rest of their organizations, which, as I will explain, makes sense only in those areas where eliminating variability is the objective. The tidal wave of attention being given today

to company-wide efforts to achieve six-sigma quality—no more than 3.4 defects per million—is one of the best examples. What happens if six sigma were applied to the creative process at an advertising agency? Ads that are the creative equivalent of homogenized quarts of milk! Variability is the lifeblood of creativity. Drive it out and you will kill it.

Conclusion: Different process-improvement approaches are required for different processes.

The Process Continuum

My attention was first drawn to this issue when I began teaching at Harvard Business School. The manufacturing curriculum showed immense strides in quality measurement and improvement methodology since I had been a student. Industry-revolutionizing approaches such as statistical process control (SPC) and just-in-time (JIT), for example, brought fresh perspectives to old situations and had the power, when properly applied, to produce order-of-magnitude process improvements.

The science for improving service processes, on the other hand, had advanced very little. I found service managers trying to adopt the classic quality-improvement approach, for example the “seven-step method,” which only worked for service processes that could be routinized a la manufacturing. This frequently led to a high level of discomfort on their part because the quality-improvement toolbox they were given lacked in approaches for improving the high variability processes under their management.

As I analyzed this phenomenon, I pictured a horizontal line—a “process continuum” with processes at each end that were diametrically opposed. (See Exhibit A.) At the left extreme were unvarying, standardized manufacturing processes. At the other end were processes for which great flexibility was required to accommodate inherent process variability (e.g., field service, consulting). My goal was to construct a model that managers could use to determine the position of a particular process relative to the extremes, to set appropriate improvement objectives, and to identify the right improvement tools for achieving those objectives.

Exhibit A - Process Continuum



- Linear flow
- Repetitive cycle of steps
- Standardized inputs
- Measurable physical changes made to process inputs
- De-coupled production and consumption
- High analyzability
- Low worker discretion

Objectives?
 Drive out variability
 Conformance to requirements
 Zero defects

- Non-linear flow
- Non-repetitive steps
- Non-standardized inputs
- Unpredictable demand peaks
- High worker discretion
- Uncontrollable external variables

Objectives?
 Embrace uncontrollable variability
 Do whatever it takes
 Total satisfaction
 Zero defections --
 customers and employees

Left Hand Side

At the left hand side of the continuum there is a set of characteristics that, when taken together, define a specific type of process. The inputs to such processes are standardized: "I want the parts to be within these tolerances; nothing else will do. Moreover, I want the documentation from your factory that provides solid evidence that the tolerances and specifications have indeed been met."

In these processes, there are measurable, physical changes made to process inputs. In fact, the use of statistical process control — SPC — requires that physical changes be made to inputs. As an item being manufactured proceeds down an assembly line, for example, its conformance to pre-determined specifications is measurable at each process step—often the measurement is electronic and graphs of the measures are generated automatically. When a process measurement exceeds variability specifications, we know we have a problem, and take appropriate measures to remedy the situation. Were measurability not possible, it would be impossible to see where unacceptable variation from pre-determined standards is occurring, forcing operators to rely on "educated guesses" in determining the root causes of excessive variation.

At the root of Japanese quality processes is the objective of driving variability out of processes. Particularly in high-variability service situations, processes have been clearly defined in the attempt to drive out variability. This can be dangerous. For example, GTE ditched Motorola as their primary supplier of mobile-telephone equipment. How could this be? Motorola is the company that developed the six-sigma quality concept -- 3.4 defects per million, arguably the ultimate in driving out variability. The problem is that Motorola drove variability out of their sales and service processes, which left GTE feeling like they were dealing with a tightly programmed robot. Motorola let a powerful approach for achieving zero defects run amok.

If an accounting firm, for example, took a totally left-hand approach to building client-service value, it would fail miserably. Rather, such accounting firm needs to be a responsive organization that embraces the variability across clients and within individual clients.

Recognize, however, that an accounting firm has many processes that lie on the left-hand end of the process continuum (e.g., payroll, internal control systems, conformance to audit standards). The reality is that every company needs to identify which activities lay toward the right-hand end of the process continuum.

Right Hand Side

In many of the services delivered by companies, the equivalent of an assembly line does not exist. Take sales-development activity. You can not operate with an approach that describes—in incredible linear detail—a sales process that boils down to something like "insert tab A into slot B." Every customer is different; they have different business and personal needs. Moreover every company's partners and managers differ in their personalities and styles, hence the way in which they diagnose customer needs and build relationships. This is not to say that there are no fundamental steps to the sales-development process, however. There are broad steps of customer qualification, needs exploration, proposal writing, proposal submission, etc., but there are many ways to accomplish these tasks. Partners and managers need to develop business in ways that fit with their personal styles.

Generally speaking, for right-hand processes, you need to do whatever it takes to handle the variation that exists — not try to drive the variation out. You can't tell customers that they must conform to your specifications or else you will show them

the door. Total satisfaction, not zero defects, is the objective, which might involve handling:

- Problems created by customer mistakes;
- Customer dislike of your company’s service-delivery elements;
- Customer dislike of new customer-service team members; and
- Customer dislike of your company’s positions on political issues.

Companies need tools to help handle and capitalize on the variability inherent in customers. A critical tool is a diagnostic framework to assess customer needs and the health of a customer relationship.

Break-through Concepts

Having located a process on the continuum, the next task is to identify process-improvement tools right for achieving the desired objectives. For example, an extraordinary guarantee, discussed in the white paper, *“Extraordinary Guarantees,”* ideally is suited for many right-end processes in which the objectives are to do whatever it takes to understand and capitalize on process variability and achieve the desired outcomes—whether for external or internal customers.

I call such tools “break-through concepts”—simple-but-powerful ideas that alter perspectives, reveal value-creation opportunities, lead to creativity and excitement, and generate a powerful sense of urgency to make significant process changes. (See Exhibit B.)

Exhibit B – Break-through concepts

“Hard” Knowledge	“Soft” Knowledge
<p><u>Breakthrough Concepts?</u></p> <ul style="list-style-type: none"> • SPC (6 sigma) • JIT • Design for manufacturability • ERP systems <p><u>Objectives:</u> Drive out variability Conformance to requirements Zero defects</p>	<p><u>Breakthrough Concepts?</u></p> <ul style="list-style-type: none"> • Values • Empowerment • Recovery • Extraordinary guarantees <p><u>Objectives:</u> Embrace uncontrollable variability Do whatever it takes Total satisfaction Zero defections -- customers and employees</p>

In the manufacturing realm, revolutionizing concepts for driving out variability include SPC (Six Sigma), JIT, design for manufacturability, and enterprise resource planning ERP. The corresponding right-hand, break-through concepts are more resistant to measurement, analysis, and control, and often require creative thinking. Values are another break-through concept, shared attitudes that serve as guides to behavior where specific guidelines would create excessive rigidity and unresponsiveness. Closely related to values is effective empowerment, which requires workers to have the competency, responsibility and authority to do whatever it takes to accomplish the desired process outcomes.

Disney’s theme parks are an outstanding example of an operation that has processes that lie at points along the entire continuum. Many “backstage” activities, costume

inventory and laundering, for example, are at the low-variability, left end of the continuum. At the same time, the company's ability to "manufacture" trust attitudes in its guests/customers relies on high-variability processes like values and empowerment. Guests' experiences come first and, embracing the variability that is unique to every guest, Disney empowers its employees to go to extraordinary lengths to satisfy every one of them. A miniscule customer-defection rate is evidence of their success.

The critical point is to match process characteristics and the types of efforts used to analyze and improve them.

What this means to you

The exercise of locating specific processes on the continuum, identifying the improvement objectives, and determining which break-through improvement approaches have the greatest leverage to achieve performance gains is one that often leads to head-thumping, "I should have thought of that!" reactions. It also brings into balance what often is an excessive focus on eliminating process variability, especially today with so much attention being given to six-sigma quality and adherence to rigid process standards.

In summary, all processes are not created equal, and traditional quality tools are inappropriate for improving many of them. Awareness and understanding of this problem is the first step in dealing with it.

About the Author

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