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The Perils of Conventional Wisdom

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"It ain't what you don't know that gets you into trouble;
it's what you know for sure that just ain't so."

— *Mark Twain*

Conventional wisdom is an asset in so many situations that one can hardly do without it. It speeds up consensus and increases our confidence in our decision making, leaving us to focus our attention on challenges for which there is no conventional wisdom to guide us. And conventional wisdom has much truth within it — having been developed over decades of observations. But in a dynamic world when the underlying assumptions shift, we follow conventional wisdom at our peril. It can easily lead your organization to make some big mistakes.

Following are examples of commonly misapplied conventional wisdom that can lead to poor decisions in a world of rapid change and uncertain demands.

Specialization Efficiencies

Conventional wisdom holds that specialization is good. A person can get very fast and reliable doing the same thing the same way again and again. The classic example is Henry Ford's assembly line which broke the complex craft of auto assembly into a sequence of very specialized jobs that could be easily taught to the relatively unskilled labor on the assembly line. Assembly line efficiencies put automobile ownership in reach of a much larger portion of the country and made the benefits of specialization a part of our national business psyche. Specialization is applied to many jobs today, such as dividing a call center into teams of specialists by type of call, or dividing incoming orders so that one person handles all of the especially complicated jobs, or conversely, the easiest tasks may be pruned off and assigned to a junior person to exclusively handle.

When the volume and nature of the work flow is predictable, specialization can increase both efficiency and quality. But when the quantity, timing, or nature of the demand for work is uncertain, specialization significantly reduces efficiency.

For example, when a service organization wanted to speed up throughput and reduce overtime costs for processing new account applications for clients in the Financial Services industry, they organized their processers into different groups to handle different clients. This enabled each processer to complete an account set-up faster because they could easily memorize the steps and forms for their small group of clients. Nonetheless, the efficiency of the operation as a whole declined substantially. Variation in the incoming volume resulted in one group being swamped one day and working overtime, while another group was very slow.

Sequential specialization, like the assembly line, often speeds up the mastery and execution of the subset of work, but will also reduce the total throughput whenever there is variation in the amount of time that a step may take. Each hand-off is an opportunity for work to be waiting for a worker or for a worker to be waiting for work. When variation is low, specialization can increase throughput, but if there is variation in incoming quality or in the amount of time needed to execute a step, specialization tends to reduce efficiencies of the operation as a whole.

To achieve the benefits of specialization, you need something increasingly uncommon in today's world: high volume/low variation work. For work that is low volume/high variation, specialization tends to reduce throughput. In such an environment, multi-skilled generalists are far more valuable. Specialization may maximize the speed of the individual, but sub-optimize the process as a whole.

Economies of Scale

Conventional wisdom holds that bigger is better. But while economies of scale favor size, the tumultuous forces of an uncertain world favor agility. Unit cost is often much lower for a single large-capacity piece of equipment than for several smaller machines. Traditional cost/benefit analysis, which rarely incorporates the impact of uncertainty and variation on total cost, almost always favors the larger investment. But with any variation in either market demand or supply (such as machine downtime), the relative inflexibility of a single large capacity machine can drive inefficiencies that greatly offset the lower unit cost that was calculated when a purchasing decision was made.

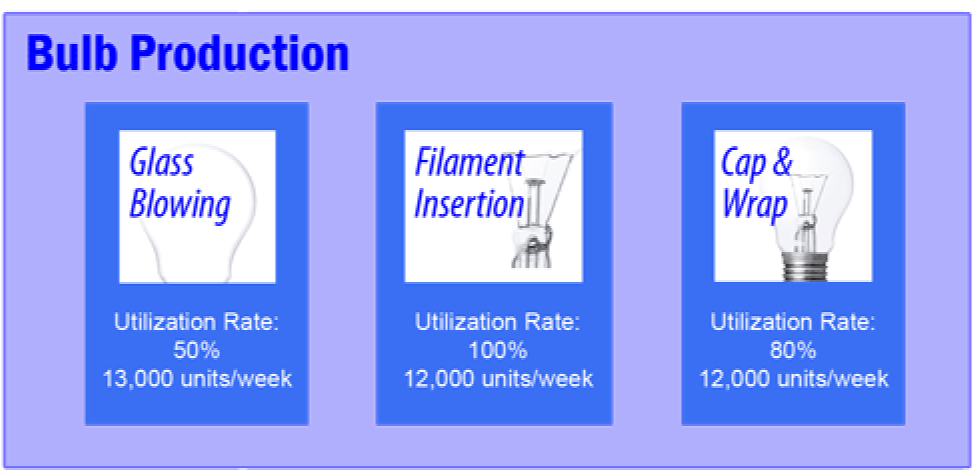
For example, a commercial bakery could purchase one large capacity mixer that could produce 100,000 loaves for far less cost per loaf than two smaller mixers. The large mixer produces large batch sizes; that's how it gets its great efficiencies. But if the market is looking for variety, none of which is ordered in bulk, the large mixer results in the worst of both worlds: you either produce large batch sizes and have a lot of scrap if the demand does not materialize in time, or you waste the purchased capacity by preparing batch sizes more closely tied to current demand for the product variety. Either way, you can never really produce enough variety for the market, because the equipment produces only one variety at a time.

Capacity to produce must be as flexible as the market is variable and dynamic. Often this runs directly counter to economies of scale. Optimizing the machine-cost-per-unit can sub-optimize the profitability of the process as a whole.

Maximizing Utilization

Conventional wisdom says that the best way to maximize profits is to encourage every department to achieve 100% utilization. Like so much of conventional wisdom, this has a ring of truth to it. And it has the added beauty of simplicity: we can evaluate and reward each department independently of one another, and if everyone is incentivized to get as close as possible to 100% utilization, then the company will surely be maximally profitable. This, too, will fail us in a world with variation.

For example, let's say a company has three operations: Glass Blowing, Filament Insertion, and Cap & Wrap. Utilization of the 3 departments (measured by the actual number of units produced divided by the number possible when machines and people work at full capacity) is 50% in Glass Blowing, 100% in Filament Insertion, and 80% in Cap & Wrap. So where do you focus your improvement efforts? You would focus on increasing utilization in Glass Blowing: either by increasing production (which would simply increase the inventory of bulbs waiting for insertion) or by decreasing capacity.



But if you look at the throughput of the process as a whole, you see that Filament Insertion is the bottleneck. At 100% utilization, they are unable to produce enough to keep the next operation, Cap & Wrap, fully utilized. Furthermore, Glass Blowing, despite the lousy utilization numbers, is already piling up inventories of bulbs waiting for filaments. The utilization numbers suggest that Filament Insertion is the last area needing improvement, but to improve the process flow, it must be the first area to improve.

That said, if the world were perfectly predictable, we could reduce the capacity in Glass Blowing and Cap & Wrap to exactly match Filament Insertion to achieve 100% utilization. But if we did so in 'Murphy's world,' any variation in glass blowing production — such as machine downtime, absenteeism, yield deterioration, material availability or quality issues — will not only impact Glass Blowing utilization numbers, but the bottleneck — Filament Insertion —will also be idle! Production opportunity lost at the bottleneck is lost forever. Instead of trying to optimize individual operations, identify the bottleneck and make sure there is enough capacity in the feeder operations to ensure that any disruptions do not impact the utilization of the bottleneck capacity. Instead of aiming to maximize utilization at each operation, as conventional wisdom would have us do, we must find and eliminate waste at the 'bottleneck' or 'rate-limiting' step in order to increase profitability.

For many companies today, the rate-limiting step is sales — generating additional demand. When sales are down, the conventional wisdom is to study operations to find ways to cut costs. The unconventional approach would be to use excess capacity to address the bottleneck — that is to use the excess capacity as a tool to address unmet market needs and grow market share.

In each of these examples, management applies conventional wisdom in order to increase efficiency only to succeed in achieving the 'local optimus' at the steep cost for the business as a whole. While conventional wisdom can be very useful in many situations, in today's uncertain world, we follow it at our peril. It is time to think anew.