

Beyond Manufacturing

FOUR PRESENTERS
AT THIS MONTH'S SIX
SIGMA CONFERENCE
DISCUSS THE
OBSTACLES THEY
FACED DEPLOYING
SIX SIGMA IN
SERVICES AND
HEALTHCARE.

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Recently, I spoke with four people who presented at this month's Six Sigma Conference in Palm Springs, FL. Roger Hoerl, manager of General Electric's (GE's) Applied Statistics Lab, and Ron Snee, principal of process and organizational excellence at Tunnell Consulting, explained the opportunities and challenges that exist for "real economy" implementations; Bert Hensley, chairman and CEO of Morgan Samuels, shared his insights about deploying lean Six Sigma in the HR environment; and Wendy Novicoff, a Master Black Belt (MBB) with the University of Virginia (UVA) Medical Center, discussed deploying Six Sigma in healthcare. Following are brief excerpts from our conversations.

Beyond the Factory Floor

Everyone knows the United States economy is shifting away from a base in manufacturing and toward services—everyone, that is, except Roger Hoerl and Ronald Snee. According to them, the shift has already occurred.

They used the term the "real economy" to emphasize that the United States is already fully immersed in an economy that does not depend primarily upon the production of goods. Hoerl explains:

The real economy is a term we use to acknowledge the current state of the economy. Manufacturing today accounts for less than 20% of the gross domestic product, which means 80% of our economy is nonmanufacturing. The real economy is not going to happen in the future; it has already happened.

Hoerl cites employment statistics that illustrate how manufacturing job numbers have been decreasing since about 1950. He also notes that professional white collar positions—and not just minimum wage, part-time jobs—have been increasing. "Companies have more people performing roles like accounting and finance," he says.

With 80% of the economy concentrated in healthcare, finance and other service functions, Hoerl and Snee reason this is where the best Six Sigma opportunities lie.

The Real Economy and Six Sigma Opportunities

If discussions of the economy in general have not yet managed to shake off the manufacturing mentality, then the world of continuous improvement is still firmly rooted in manufacturing processes. In spite of the opportunities beyond manufacturing, a majority of Six Sigma literature, says Hoerl, focuses strictly on manufacturing applications.

Because continuous improvement has traditionally been applied in manufacturing and engineering, manufacturing appears to contain the

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most opportunities for savings. Manufactured products are also tangible and visible. The actual waste and rework involved has a physical presence and has appeared on accounting sheets for decades. By contrast, most service related functions are not measured and analyzed for improvement. For example, Hoerl explains, “In accounting there is no line item to document the waste and rework involved in redoing a budget seven times at the request of the CEO.”

As a result, two faulty assumptions are reinforced:

1. All the problems and opportunities exist in manufacturing.
2. Six Sigma and continuous improvement do not apply to areas such as finance and healthcare.

Although nonmanufacturing organizations don’t use the conventional vocabulary of process improvement, Hoerl believes the concepts and tools still apply. “Hospitals and banks don’t realize they are already doing gauge repeatability and reproducibility (R&R) and measurement systems analysis,” he says. “In fact, the accounting profession was created as gauge R&R for financial metrics, ensuring financials are accurate and comparable.”

Where can nonmanufacturing organizations interested in deploying Six Sigma start? To Hoerl, the answer is obvious. “In the real economy, almost always, you will find those opportunities in the key critical to quality factors of cycle time and accuracy,” he says. “Whatever the process, you can ask how long it took and whether you came out with the right answer.”

Challenges Beyond Manufacturing

Acting on Six Sigma opportunities outside the traditional manufacturing environment means first overcoming the unique challenges that exist outside manufacturing, including cultural resistance and statistical complexities:

- **Cultural resistance:** Hoerl believes the resistance to continuous improvement is the single largest barrier to deploying Six Sigma beyond manufacturing. Finance and healthcare staff aren’t used to thinking about continuous improvement as part of their jobs and tend to adopt a stance that

says, “We’re different; Six Sigma doesn’t apply to us.” The accounting staff does not usually believe it is paid to improve the way it does accounting but to make sure existing procedures are being followed, a mindset that seems antithetical to continuous improvement.

- **Statistical challenges:** As one of the most important metrics for Six Sigma application outside manufacturing, cycle time often creates statistical complexities for practitioners. Cycle time typically has a skewed distribution, not a normal bell shaped curve, and practitioners need to know their options. Discrete data, such as percentage accurate, also occur more often in real economy applications.

Responding to these cultural and statistical challenges is perhaps where practical experience matters most and where the nonmanufacturing environment faces another disadvantage. “An additional problem for industries such as healthcare and finance is that, with some notable exceptions—such as actuaries in insurance—they are virtually devoid of experienced statisticians and engineers,” says Hoerl. “A number of practitioners have book knowledge but not much experience in real application.”

An experienced practitioner will recognize and deal with familiar signs of resistance more quickly. An MBB who has encountered non-normal data before will also know when it’s necessary to perform transformations or use nonparametric techniques, as well as when normality is not as important. The disadvantage for nonmanufacturing organizations is yet another opportunity for established MBBs who gained their experience in manufacturing. A few organizations, Hoerl notes, have begun to hire outside their industries, bringing in established MBBs to be leaders in both the technical and nontechnical sides of Six Sigma. Bank of America is one such example.

Regardless of how many more MBBs make the journey into Six Sigma applications in healthcare, finance or other service industries, there are lessons to be learned from the manufacturing environment. Adapting those lessons to the specific opportunities and challenges that exist outside manufacturing will ensure Six Sigma catches up to the real economy.

Driving Growth in Executive Recruitment

When Bert Hensley stepped into the role of chairman and CEO of the executive recruitment firm Morgan Samuels in 1997, he brought with him a strong and diverse background in process improvement. In addition to degrees in law and business administration, he holds a degree in engineering, which is one of the more traditional arenas for process improvement. From several years' work experience bringing the lean based approach of McKinsey & Co., a management consulting firm, to other organizations, he acquired a practical understanding of implementation issues. Having successfully applied a process approach while working for a large executive search firm, he also knew quality strategies had much to offer hiring strategies.

He was confident he could put his process improvement knowledge and experience to use for Morgan Samuels. "No one else was taking a process approach at the time," he recalls. "Based on my experience, I knew if I created a superior process, I would win clients more easily."

Seven years of lean Six Sigma later, the firm has grown sevenfold, with profits increasing every year.

Improve Hiring With Lean Six Sigma

In some fundamental ways, the implementation of lean Six Sigma at Morgan Samuels has proceeded much as any other manufacturing or engineering implementation. For example, Hensley understood the importance of applying lean principles to existing Morgan Samuels processes before attempting to launch Six Sigma improvement projects. "If I have five steps in a process, and I jump in to increase throughput at each step, I could end up improving nonvalue added steps, wasting improvement energies on the wrong places," he explains.

He also identified bottlenecks early on and then established a habit of routinely looking for bottlenecks about every six months. "We're measuring everything, so it's easy to see where the holdups are," says Hensley. The biggest breakthrough occurred in the research process. "We simply weren't identifying enough people or the right quality of candidates to call," he says.

On the surface, the solution Morgan Samuels implemented—increasing research staffing by four times—appears adverse to conventional lean and process improvement principles. Hensley says an average executive search involves 70 people over six months.

With more researchers at work, Morgan Samuels can identify and screen about 200 people in only six weeks.

While adding staff may not sound like a lean strategy, Hensley points out lean organizations examine not just total head count, but also allocation of people and resources. Beyond identifying which tasks add value, implementation leaders must also verify the right level of talent performs each task. "I discovered I was paying people to spend entire days leaving voicemails," Hensley says. Adding extra staff simply to research candidate prospects and leave voicemails allowed his recruiters to focus their expertise where it would be most valuable—closing searches. Morgan Samuels recruiters now fill twice as many positions as the industry average, according to Hensley.

In addition to more candidates sourced and more positions filled in less time, the staffing changes brought another surprising result. More candidates returned calls when voicemails were left by research assistants rather than recruiters. "I can only attribute it to snob appeal," says Hensley. "Candidates seemed to think, 'This must be an important person if he or she has an assistant who can make the calls.'"

Finding New HR Opportunities

Another lean Six Sigma discovery that promises breakthrough results for Morgan Samuels involves paying attention to customer rationalization, or pursuing the work that will be most profitable for the organization. According to Hensley, this is one example of how process improvement methodologies such as lean and Six Sigma work to expose overlooked opportunities. "It can be humbling," he admits. "Every two to three months we make a discovery that baffles us. How did we not see it before?"

Until recently, Morgan Samuels had never tracked and compared closure rates for lower level and higher level searches. With a 100-day average cycle time for closing searches—well below the 180-day industry average—analyzing the different contributors to overall cycle time had not seemed a priority. However, once the organization began recording this data, it found the searches that brought in the minimum fee charged were actually increasing the overall cycle time:

- The average cycle time for minimum fee searches

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was 70% higher than the time for more profitable searches.

- The time spent on minimum fee searches added almost 20% to the organization's overall cycle time.
- Minimum fee searches represented only 8% of total revenue.

Without pursuing minimum fee searches, Morgan Samuels would have had a lower overall cycle time and earned more revenue. The organization now carefully considers which searches are worthwhile, eliminating revenue that isn't as profitable and absorbs resources.

Still on the horizon for lean Six Sigma at Morgan Samuels is establishing a reliable metric for tracking quality of hire, a measurement that has evaded the best efforts of the industry. "Quality of hire is the one gaping hole we have," Hensley says. "It's not just a matter of longevity of hire or how quickly a hire is promoted. We need a more robust way to measure it." Morgan Samuels currently has a team working on a project to figure out how to measure quality of hire.

The Scaffolding of the Creative Process

Implementing lean Six Sigma takes time in an industry or organization not accustomed to the formal pursuit of process improvement, Hensley cautions. "It takes a couple of years to build the basic infrastructure," he notes, adding that in the first two years of the Morgan Samuels implementation, lean and Six Sigma did not appear to be remarkably successful.

Part of the challenge stemmed from the reluctance of his recruiters to adopt a process improvement mindset. Hensley faced two common objections:

1. **We're different; process improvement doesn't apply to us.** Hensley's response? "American manufacturing said the same thing in the 1960s and realized in the '80s that it had to catch up."
2. **This is an art, not a science.** Hensley counters

with his own maxim: "Discipline is the scaffolding of the creative process." Citing the biographies of the greatest artists in history, he contends most successful artists have followed some kind of process, changing it only when they saw an opportunity for improvement.

Beyond these objections lies a challenge more specific to the HR field. Most people who choose HR careers, Hensley observes, are not analytically driven; they are attracted to HR because of the opportunities for human interaction. The statistical tools and analysis, as well as having to hold others accountable, conduct benchmarking and identify competency gaps, make HR professionals uncomfortable.

Hensley counsels his staff to embrace process improvement as a way of making the human interaction they love even better. "Anyone working in HR can have an exponentially larger impact on employees through process improvement concepts," he says. He also emphasizes the important role HR plays in process improvement success. After all, results are impossible without the right people.

Process Improvement Expertise

Another tactic Hensley uses to meet the challenges of implementing lean Six Sigma in the HR environment is to hire talent from outside the industry. At Morgan Samuels, only two in 10 recruiters have an HR background. Hensley often prefers to hire process improvement professionals from other industries and then train them as recruiters—a lesson he learned from GE Capital. "GE Capital first tried to build its Six Sigma implementation using people from within services, but it was only when it took its best talent from manufacturing and imported them to services that Six Sigma took off," he says.

When conducting searches for process improvement leaders for other organizations, he encourages clients to consider candidates from manufacturing or supply chain management. For example, in a search for a head of process improvement for a large financial

institution, he was specifically instructed not to deliver candidates focused on Six Sigma. After he had determined there were no ideal candidates within the financial services industry, he finally convinced the organization to interview a Six Sigma MBB with GE experience. “This guy couldn’t even spell financial services,” Hensley remarks. Still, within two weeks of meeting him, the organization made him an offer. Within his first six months on the job, he identified \$430 million in cost reduction opportunities.

The lean Six Sigma success of Morgan Samuels attests to how adaptable process improvement methodologies and experts can be. “The tools work. It’s just applying them that requires some customization,” says Hensley. “No matter what your industry, it takes time to understand how frequently you should be looking at bottlenecks and how frequently you can make changes. You have to discover what your own absorption rate for change is.”

Optimizing Patient Throughput In a Complex Medical Center

Wendy Novicoff, an MBB with the UVA Medical Center, knows what it’s like to be the only healthcare professional at a Six Sigma conference, which is part of the reason she delivered a presentation at this month’s conference. “Time and time again,” she says, “what I hear from people is that if they’re in healthcare, they need to hear about healthcare, not examples from manufacturing.”

Novicoff was excited to describe how she and a team of nine used the Six Sigma methodology to expedite inpatient discharge time to better accommodate patients waiting for transfer from outlying hospitals, the postsurgical care unit and the emergency department.

Project Background

The team first launched its project to improve patient throughput time in 2001, when UVA began its Six Sigma deployment. Top management singled out patient throughput as a problem requiring attention, instructing a team to tackle the project during training. “Of course, this means of project selection is entirely anti-Six Sigma,” Novicoff admits. “It turned out to be an entertaining informational and educational experience.”

Patient discharge time is a complex measure dependent on a variety of processes, all of which, Novicoff recalls, were heavily siloed at the time. Nevertheless, the team did manage to introduce improvements and establish a control plan, which was quickly forgotten after the team left.

Years later, Novicoff and a team of nine decided the time was right to work on patient throughput once

more. Armed with data from the pilot project and determined to make the improvements stick, Novicoff took an approach that she describes as “finding knowledge that’s lost in data.” The challenge was not to gather as much data as possible but to better understand the data they already had.

Tools such as root cause analysis, statistical process control and benchmarking helped identify critical process inputs (critical X’s), isolate causes and identify solutions. Among the most important discoveries was a relationship between patient discharge time and length of patient stay:

- The earlier in the day patients were discharged, the better the chances of admitting new patients that same day.
- The earlier in the day new patients were admitted, the more that could be accomplished during the first day. Diagnostic services not completed by 5:00 p.m. were postponed until the next day.
- Accomplishing more in the first day decreased the length of stay by an average of one day. Patients who were admitted by 2 p.m. had a statistically better chance of being released one full day sooner.

The problem of improving patient throughput was really a matter of determining how to discharge patients earlier in the day.

Key Process Improvements

Of all of the critical X’s studied, Novicoff and the team determined the time the final medical discharge

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order was entered into the UVA online system had the biggest impact on actual discharge time. The improvements the team implemented thus focused on the final discharge order and the actual discharge time. The team:

- Mandated that final medical discharge orders be entered into the online system by 8:30 a.m. the day of a patient's discharge.
- Created a daily checklist of critical X's, essential activities for meeting the early discharge time.
- Developed, documented and implemented standard operating procedures.
- Implemented scorecards to track progress.
- Created a patient transition unit for patients who are ready for hospital discharge but still require one last meal, additional instructions or some other last minute service.

Through these improvements, the team is in the process of meeting its goal to have 40% of all inpatients discharged and out of "active patient" online systems by noon. The team will attempt to increase this percentage to 50% by this July.

Winning Staff Buy-in

For final medical discharge orders to be placed on time, preliminary orders have to be entered from other units such as radiology and laboratories, and interdisciplinary discharge plans must be developed. Securing the commitment of a wide range of hospital staff was essential to the project's success. The team held discussions with all staff involved to ensure they understood how their jobs related to the patient's discharge time and length of stay. GE's change acceleration method also proved helpful.

When staff needed extra convincing, Novicoff used the three D's—demonstrate, demand and data:

I considered who my audience was at the particular moment and what they needed to be convinced. For most of the physicians, it was data. When they saw the data showing how well others were doing, they wanted to improve. The nurses needed to know they were taking care of patients in the best

way they could, so for them it was a matter of demonstrating how the new processes were good for the patient.

Occasionally, she had to resort to "demand." Novicoff admits, "Our team got the dean of the medical school to promise to make life more challenging for staff if they didn't participate." Novicoff is also not above playing on ego and the competitive nature of hospital staff, pitting doctors against nurses, women against men ... anything that will motivate them to make improvements.

A Sweeping Culture Change

Perhaps the most important achievement of the UVA project to expedite inpatient discharge time is the culture change it managed to introduce. As at most, if not all, hospitals across the country, a patient at UVA could not be discharged without the approval of the doctor assigned to his or her case. Novicoff's improvement team found too many patients who were ready for discharge were simply waiting for their off-duty doctors to return and give the order. In hospitals where staffing depends heavily on residents who work specific shifts, the wait could be excessive.

Convincing doctors to make the final decision for each others' patients meant a paradigm shift for the medical community. "The issue of 'doctor not there' to make the decision has been at work for 90 years," says Novicoff. "Residents would say, 'That's not my patient. I can't make the decision.' We started saying, 'You have to.'"

Doctors at UVA are now becoming more accustomed to a shift-change mentality, taking care to hand off the information their colleagues will need to make decisions about discharge orders. Novicoff expects the improvements in communication to have far reaching effects for both doctors and patients.

She explains the Joint Commission on Accreditation of Healthcare Organizations, which sets standards for, evaluates and accredits U.S. healthcare organizations, has determined a primary root cause of medical errors is insufficient communication. To illustrate, Novicoff cites the familiar example of errors related to peni-

cillin allergies. “Obviously, nobody would want to give a patient penicillin and cause a reaction. It happens because the communication about allergies does not occur every single time it should. One person doesn’t tell another person. Or somebody simply forgets to ask.” Improving shift change communication not only means more patients can be released on time, it also improves patient safety.

Healthcare Is Its Own Beast

Novicoff’s project presentation demonstrates how very real the opportunities for Six Sigma in healthcare are. Still, she cautions it can be easy to underestimate the difficulty of a healthcare implementation. “Healthcare really is its own beast,” she says, quickly clarifying, “It’s not that we’re special. It’s not that the concept of process improvement doesn’t work in healthcare. It’s just that we deal with people every step of the way, with their emotions, literally with life and death.”

Six Sigma, she points out, is actually the latest development in a long history of performance improvement in healthcare. As a result, one of the cultural challenges she and other MBBs face is staff skepticism. When physicians and nurses—people who deal with extraordinary events every day—watch process improvement methods come and go, a measure of skepticism about the latest program is only natural.

In both her dealings with co-workers and her presentations to the healthcare and quality communities, Novicoff finds it important to show why Six Sigma can do better than anything her audiences have seen or tried before. “In terms of Six Sigma literature, health-

care is still the underdog,” she says. “I’m lucky to have a great team—and the other MBB I work with is magical at leading teams—which means I can be free to give these presentations and spread the word about how Six Sigma is working for us.”

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